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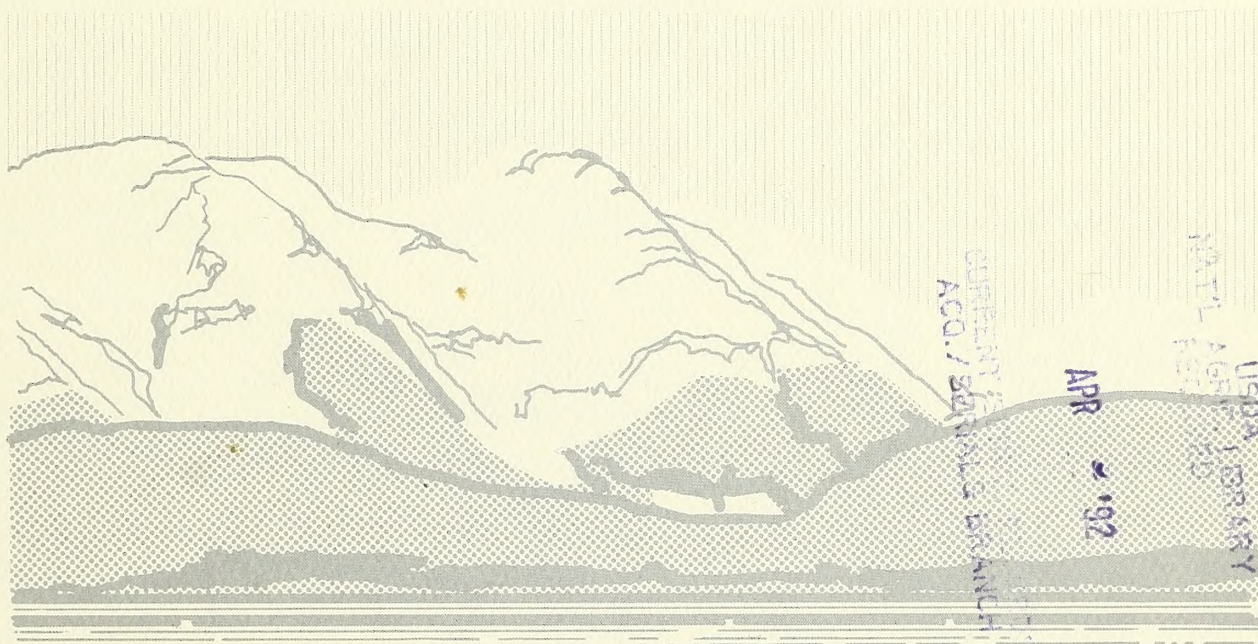


at 1/8/82

Kensington Gold Project

FINAL ENVIRONMENTAL IMPACT STATEMENT

VOLUME II APPENDICES



Cooperating
Agencies



EPA



Prepared for the
Forest Service by:

ACZ

Kensington Gold Project

Final Environmental Impact Statement

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DEIS

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Kensington FEIS

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THANE NEIGHBORHOOD ASSOCIATION

6025 Thane Road, Juneau, Alaska 99801 (907)586-3451

June 14, 1991

Mr. Ken Mitchell
Juneau District Ranger
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

Our association would respectfully request that you extend the comment deadline on the Forest Service's draft environmental impact statement on the Kensington Mine from August 1 to October 30 and delay hearings planned for mid-July until October 1.

1.1

The gillnetting fleet will be fishing from mid-June until October and this means that almost no fisherman will be able to review the Kensington draft EIS with any degree of thoroughness until September. Nor will fishermen be able to attend hearings until October which is when the gillnetting season will come to a close. The gillnetters are a key group to be affected by the Kensington proposal. In addition, the trollers will be fishing until September 20 and they, too, are interested in this project because stocks which they fish on would be impacted.

I believe it is important for the Forest Service and the developer as well as for the public to ensure that sufficient time for public comment is provided; in this case, the timing is just really off.

The Thane Neighborhood Association has been focused on the proposed reopening of the AJ mine; however, we are also interested in the Kensington project because of the cumulative socio-economic impacts which will be occurring if both the Kensington and the AJ mine proposal are approved.

I would appreciate your consideration of this request and look forward to hearing from you.

Sincerely,

Paula Terrel

Paula Terrel
President

JUNEAU
RANGER DISTRICT

JUL 19 '91

DISTRICT RANGER _____
DEPUTY RANGER _____
TLM _____
REC _____
F & W _____
BM _____
VIS _____

KENSINGTON DEIS RESPONSES TO PUBLIC COMMENTS

1.1

The Forest Service received many requests to extend the comment period and move the public meetings to a time later in the year. In response, the comment period was extended from 60 days to 90 days. The extended comment period closed September 3, 1991. Two water quality workshops were added to give the public additional opportunity to learn about and discuss water quality and related issues. The water quality workshops were held August 8, 1991 in Haines and August 9, 1991 in Juneau. These dates coincided with the EPA public hearings on water quality. The Forest Service feels this extension of the comment period, combined with the added water quality workshops, provides a reasonable balance between the public's desire to provide input on the project and the proponents desire to move the project forward on a timely basis.

RANGER DISTRICT

Mr. Ken Mitchell
Juneau District Ranger
8465 Old Dairy Rd.
Juneau, AK 99801

JUL 24 '91

DISTRICT RANGER *Ken*
DEPUTY RANGER *Regis*
TLM _____
REC _____
JUNE 17 1991
BM _____
VIS _____

Dear Ken:

2.1

We respectfully request that you extend the comment deadline on the Forest Service's draft environmental impact statement on the Kensington mine from August 1 to October 1, and delay hearings planned for mid-July until September.

The summer months are extremely busy for many of the people who have an interest in reviewing the Kensington project. Few will be able to give the draft EIS the attention it deserves during the presently scheduled comment period. The requested extension would make it possible for more people to review the EIS, provide detailed comments to the Forest Service, and attend September hearings.

We believe that it would be in the Forest Service's and the Kensington Venture's best interests to receive detailed comments now, during the draft EIS comment period, rather than later after a final EIS is issued. All parties will benefit if concerns are aired early in the process.

We would appreciate your reply as soon as possible. Thank you for your consideration.

Sincerely,

Dale Kelley
Dale Kelley
Alaska Trollers Association
Thomas Ely
Thomas Ely
Lynn Canal Conservation
Greg Seider
Greg Seider
United Fishermen of Alaska

Dana Owen
Dana Owen
Friends of Berners Bay
John B. Sisk
John B. Sisk
SE AK Conservation Council
Mark Thoreson
Mark Thoreson
United SE Alaska Gillnetters

Alaska Trollers Association
130 Seward Street #213
Juneau, AK 99801
586-9400

Friends of Berners Bay
949 Goldbelt
Juneau, AK 99801
586-5631

Lynn Canal Conservation, Inc
P.O. Box 1014
Haines, AK 99827
766-2869

Southeast Alaska Conservation Council
419 Sixth Street #328
Juneau, AK 99801
586-6942

United Fishermen of Alaska
211 4th Street #112
Juneau, AK 99801
586-2820

United Southeast Alaska Gillnetters
P.O. Box 21186
Juneau, AK 99802

2.1
Please see response no. 1.1.

GREGORY FRANK COOK

ATTORNEY AT LAW

P.O. Box 618, Douglas, Alaska 99824
(907) 586-9719*Admitted to Practice in Alaska and Oregon*Mr. Ken Mitchell
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

June 21, 1991

RE: KENSINGTON MINE--EIS--PUBLIC COMMENT PERIOD

Dear Mr. Mitchell,

3.1 [We respectfully request that you extend the deadline for receipt of public comments on the U.S.F.S. draft EIS for the Kensington Mine until October 1, 1991.

3.1 Please see response no. 1.1.

This office has provided you with written comments on behalf of the Territorial Sportsmen before the draft document was released. Unfortunately, I leave Alaska for the summer to perform contract work (guiding mountaineering trips in the Alps--not a bad duty!) and cannot complete review of the draft or prepare comments for review by the Sportsmen until my return.

Thank you for your consideration.

Sincerely,



Gregory F. Cook

JUNEAU

RANGER DISTRICT

JUN 24 '91

DISTRICT RANGER _____
DEPUTY RANGER _____
ILM _____
REC _____
F & W _____
BM _____
VIS _____

Elizabeth Opp
Box 92
Gustavus, AK 99826

June 24th, 1991

Dear Mr. Mitchell,

I urge you to extend the comment deadline until Oct. 1, 1991 on the Kensington mine proposal. People in S.E. are very busy working in the summer and this project needs a reasonable period to be assessed.

As a resident of Gustavus I am very concerned about the impact of the proposed mine. I don't believe a tailings dam into Lynn Canal is in the best interest of our area. I am concerned about the mine's impact on the fisheries and tourism also. I want to see the tailings backfilled at least, with no discharge of pollutants into Lynn Canal.

Thank you for your time.

Sincerely,

Elizabeth Opp

DEPUTY RANGER
RANGER DISTRICT
JUNE 24, 1991

JUNE 24, 1991
RANGER DISTRICT

4.1

Please see response no. 1.1.

4.2

The projected impacts on fisheries of all alternatives are fully displayed in Chapter 4 of the FEIS. The conclusion is that implementing any of the alternatives studied would have no significant effect on the commercial fishery.

4.3

The expected impact on tourism is reflected in the Chapter 4 discussions of effects on visual resources and effects on recreation. Although some tourists may react negatively to the presence of the mine, it is expected that many would consider it to be a point of interest along Lynn Canal. The project would be designed to reduce the contrasts with the surrounding landscapes consistent with the Visual Quality Objectives.

4.4

It is technically impossible to backfill all tailings into the mine.

4.5

Chapters 2 and 4 of the FEIS include a discussion of water treatment that was not included in the DEIS.

5.1

Please see response no. 1.1

5.2

This comment is similar to others that questioned the adequacy of the existing baseline information. Concerns have been raised by different individuals and entities that existing information is inadequate to perform a valid assessment of impacts to the aquatic resources in the Point Sherman area.

This view holds that the aquatic biota needs to be rigorously studied to determine spatial and temporal changes in population levels for all or most species within the affected zone. Proponents of this view advocate such studies for at least one or two years to be able to describe baseline abundance and migration patterns during all seasons. It is argued that this information is needed on larval and older life stages of all major benthic, demersal, pelagic, and planktonic species that might be in the vicinity.

On its face this view may seem like an appropriate approach for predicting effects and monitoring outcome to learn in fact whether damages occur. Some believe that this approach would be necessary to determine mitigation levels should damages occur.

That view, however, completely fails to recognize the high degree of natural variability within aquatic populations like those inhabiting Lynn Canal. The aquatic communities in Lynn Canal are not unlike those in other areas along the West Coast of Alaska, Canada, and the Pacific Northwest in complexity. The biota inhabiting these waters are tremendously dynamic; interactions between organisms and between organisms and their environment are extremely complex. Migrations of many of the species of concern that utilize Lynn Canal extend for hundreds of miles, if not thousands, during which highly variable conditions are encountered. Some of those conditions vary naturally, while others are related to man's involvement, like fishing, which also vary significantly.

Populations in the Lynn Canal area for which some type of time series data exist commonly show large fluctuations. This point is exemplified in salmon gillnet catches, which commonly reflect changes in population sizes. Since 1970, the annual catch of sockeye in Lynn Canal has varied between 18,400 and 472,000, averaging approximately 208,000 over a 20-year period. Within a five-year period between 1985 to 1989 the catch of chum increased from about 124,000 to nearly 700,000, coho from about 50,000 to 98,000, and pink from about 38,000 to nearly 240,000.

Abundances of other non-salmon species in the area show at least an equal degree of fluctuation, as demonstrated, for example, for walleye pollock. This species was very abundant throughout the region in the 1970s but is now only a small fraction of those levels. Causes of the decline are not known.

Ken Mitchell
2700 SE 59th Ave
Anchorage, AK 99506
Phone 275-5531

JUNEAU DISTRICT
RANGER DISTRICT

1910191

DISTRICT RANGER
DEPUTY RANGER
REC
W
VIS

Tunera District Ranger Ken Mitchell

lists

8465 old Dairy Rd

Tunena, AK 99801

Dear Mr. Mitchell,

Although I do not live in Alaska, I have taken five trips to Alaska, including two trips on the Interior Passage.

I feel that gold mining in Lynn Canal would be a great mistake. At least we should see to it that a proper EIS is made. Please extend the comment deadline until Oct 1, and please require mining to

1) Conduct thorough studies of local ends, bottomfish and juvenile salmon use of the Pt. Sherman area.

2) This is an important aspect of a complete EIS because cumulative impacts of mining and gold

3) Run cost of required additional road work associated with the mining, if mining is allowed at all.

4) If mining is allowed, it over makes sense for the company to build wastewater treatment facilities.

It is not fair to allow the company to make money at the expense of the salmon and the fishing industry.

5) Build fill, rather than leave tailings.

Thank you

Sincerely,
Ken Mitchell

The detailed comments from the State of Alaska's letter dated September 3, 1991 attest to the dynamic nature of fish populations in the Lynn Canal area (page 21): "Pollock were over-abundant in Lynn Canal in the early to mid-1970s. Their populations crashed in the late 1970s and have been at a low ebb since. There have been other local species composition changes during the last twenty years as well, e.g., an increase in salmon abundance, a decrease in herring, true cod, and tanner crab abundance, etc."

Those points are a good characterization of the highly variable nature of the aquatic communities in Lynn Canal. (Characterizing the pollock population as "over-abundant" in the 1970s, however, presupposes that some lower, more stable level is somehow more normal, which of course is not known for a long period of time. What is "over-abundant" for these populations? Normal appears to be large fluctuations.)

The decline in the Tanner crab populations bears special note. The Lynn Canal stocks have suffered in very recent history from an outbreak of a blood parasite. The first recorded isolation of this parasite reported in the literature occurred in Lynn Canal, where it now apparently affects up to 95 percent of the Tanner crabs in the upper canal (Meyers et al. 1990). The disease appears to cause a 100 percent mortality. This condition is yet another example of the dynamic nature of these animal populations and the complexity of factors affecting their abundance and movements.

Given these natural conditions existing in Lynn Canal, an approach to establish pre-treatment conditions to evaluate treatment impacts would require a colossal effort extending for many years. The time period would need to be long enough to describe both annual and longer term fluctuations in abundance and to do so with sufficient statistical power. Some species of concern, like halibut, have relatively long lives, and the period of study would need to be very long.

This issue was addressed for salmon species by Lichatowich and Cramer (1979). They described the number of years of study that would be required to detect a statistically significant change in abundance or survival of salmon within a single river system due to human intervention. They concluded that studies of abundance and survival would require 20 to 30 years to produce only an 80 percent chance of being able to detect a 50 percent change. The time period needed to evaluate changes for the populations utilizing the area of concern in Lynn Canal could be much longer.

In short, studies of abundance would provide a very low statistical sensitivity to detect change due to the proposed project.

A comprehensive study approach of the kind being advocated, which realistically would extend no more than a few years to establish baseline conditions, would provide virtually no more statistical power in being able to predict outcome than with information now available. Likewise, use of such data for mitigation purposes would be of little or no value.

Comments calling for extensive studies, including those from the Alaska Department of Fish and Game and the U.S. Fish and Wildlife Service, have failed to address this matter. Expectations for such studies are unrealistic and not borne out of careful consideration of how the information would be used. The concerns of Lichatowich and Cramer (1979) about too little attention being given to the matter of statistical power in setting up environmental studies is highly relevant to the comments of those agencies.

The approach that is being used to project impacts for the FEIS is based mainly on inferences from an assortment of information. Some of this information was collected at or near the project site, while some was from other areas in Lynn Canal and the larger region. Combined, this body of information is substantial. It includes data on oceanographic conditions, harvest records, aquatic surveys, and life history studies. Much of this data was not collected as part of this project.

This approach assumes that the various species of animals known to occur in Lynn Canal do in fact utilize the waters at or adjacent to the project outfall. More studies to document additional species at the site, which are already known to occur elsewhere in the region, would be of no additional value to this approach.

The approach then considered the opportunities or likelihood that animals or their habitat would be exposed to or disrupted by some form of change.

Since the DEIS was issued several additional studies have been conducted to better define existing conditions. These studies were aimed at describing juvenile salmonid usage of the nearshore environment along Lynn Canal in the vicinity of the project, and at quantifying and describing freshwater fish populations and their habitat in Sherman and Sweeny creeks. Results are presented in the FEIS.

5.3

Additional analysis has been done to assess cumulative effects from operation of both the Kensington and AJ mines. Please see Chapter 4 of the FEIS.

5.4

The Forest Service, as lead agency for preparation of the EIS, is responsible for displaying the range of environmental effects of the project, including socio-economic effects. This serves to alert responsible local, State and federal officials who can implement measures that fall outside Forest Service authority. The City and Borough of Juneau (CBJ) is reviewing the social costs of project construction. Their Large Mine permitting process is the appropriate mechanism for requiring mitigation of socio-economic impacts.

5.5

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

5.6

It is technically impossible to backfill all tailings into the mine.



Working for the Nature of Tomorrow.

NATIONAL WILDLIFE FEDERATION
750 W. Second Ave., Suite 200, Anchorage, AK 99501 (907) 258-4800

June 25, 1991

Mr. Kenneth E. Mitchell
District Ranger, Juneau Ranger Dist.
Tongass National Forest
8465 Old Dairy Road
Juneau, AK 99801

Dear Mr. Mitchell:

I am writing to request you to consider extending the deadline for commenting on the Kensington Gold Project Draft Environmental Impact Statement.

This office plans to submit comments on the DEIS as well as the draft NPDES permit, 401 certification, and section 404 permit for the project. I suspect that our reasons for requesting additional time to review the DEIS probably are not unique: the need to review simultaneously the relevant documentation for each of these permitting actions, compounded by the press of other business and the fact that June-July coincides with many vacation and other summer activity plans. Under the circumstances, I think it is likely that the Forest Service would receive more, and more thorough, input on this project if the public were afforded an enlarged comment period.

Thank you for considering this request and for keeping this office informed of any planning developments.

Sincerely,

Debra L. Donahue JUNEAU
Staff Counsel RANGER DISTRICT

cc: S. Douglas Miller, NWF

JUN 25 1991

DISTRICT RANGER
DEPUTY RANGER
ILM
REC
F & W
BM
VIS

6.1
Please see response no. 1.1.

6.1

Marian Mann
P.O. Box 802
Kotzebue, Alaska 99752
June 26, 1991

Ken Mitchell, Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Rd.
Juneau, Alaska 99801

I am writing in response to the Kensington Mine development.

- ① I believe further studies are needed, beyond the EIS, to determine potential marine impacts in the Pt. Sherman area.
- ② I am opposed to the discharge of any mine-related pollutants into Lynn Canal.
- ③ More attention is needed to better define the socio-economic and environmental impacts of development of the Kensington and A-J projects.
- ④ Consider requiring mine tailings to be backfilled or otherwise disposed of to reduce the visual and water quality impacts and eliminate the need for a tailings dam.
- ⑤ Use dry tailings disposal for tailings that cannot be backfilled to reduce surface impacts and protect local creeks.
- ⑥ If a tailings dam is implemented develop a long-term plan to maintain it.
- ⑦ Identify revenue sources to fund the increase human services, including schools, alcohol/drug treatment, health care, and day care, necessary to accommodate the population increases resulting from the mine.
- ⑧ Extend the public hearing comment deadline until October 1.

Please consider the above points carefully as you prepare your decision on this project.

Thank you.

Sincerely,
Marian Mann

7.1

Please see response no. 5.2.

7.2

The Forest Service has forwarded your comments to the Environmental Protection Agency (EPA) and Alaska Department of Environmental Conservation (ADEC). Under the Clean Water Act EPA is responsible for issuing NPDES permits in Alaska and ADEC is responsible for determining whether such permits meet Alaska water quality standards. These are the permit(s) that would govern any discharge into Lynn Canal. The Forest Service, through authority in issuing a plan of operations, will require that these permits be in place before any discharge is allowed.

7.3

Additional analysis has been done to assess cumulative effects from operation of both the Kensington and AJ mines. Please see Chapter 4 of the FEIS.

7.4

Several readers of the DEIS commented that the use of underground tailings disposal combined with dewatered surface disposal represented, in their opinions, the best possible combination for disposal of project wastes. The DEIS, in Chapter 2, discusses the attributes of backfilling tailings into the mine. About 12 percent of the tailings could be backfilled into the mine. In the very best case, assuming no expansion of the estimated 12,000,000 ton ore reserve, this would leave over 10,500,000 tons of tailings to be disposed on the surface. This would result in little measurable reduction in impacts to other resources. Chapter 4 of the FEIS contains an expanded discussion of the geotechnical aspects of dewatered tailings disposal as compared to conventional tailings disposal.

7.5

Although the EIS analysis cannot support required tailings backfill based on the environmental impacts of surface disposal, the EIS does recognize that some minor reduction of impacts would occur should backfilling take place.

7.5

The Kensington Venture has supplied the Forest Service with a conceptual reclamation plan for the tailings facility (see DEIS, Appendix A). This plan contains sufficient detail to determine that long term reclamation of the tailings is feasible and gives the Forest Service the information needed to complete the NEPA analysis.

After the ROD is issued the Kensington Venture will be required to prepare a Plan of Operations. A detailed tailings reclamation plan will be required as part of that plan. No mine development work can proceed until the Plan of Operations is approved by the Forest Service. One aspect of approval of the Plan of Operations is the setting of bond amount on the project. By this mechanism the Forest Service will insure that sufficient funds for long term reclamation of the project are available.

In addition to the Forest Service required bond, the City and Borough of Juneau (CBJ) will require a bond for the project through their large mine permit procedures. The Forest Service and CBJ will work together to insure that all aspects of the project will be covered by an appropriate bond.

7.6

Please see response no. 5.4.

7.7

Please see response no. 1.1.

8.1

Please see response no. 5.2.

8.2

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

8.3

Please see response no. 7.4

8.4

Please see responses no. 5.3 and 5.4.

JUNEAU

RANGER DISTRICT

June 26, 1991

JUN 02 '91

DISTRICT RANGER
DEPUTY RANGER
ILM
REC
F & W
BM
VIS

Ken Mitchell, Juneau District Ranger
U.S. Forest Service
38465 (Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell,

We have grave concerns about the development of the Kensington gold mine at the Lynn Canal.

We request that you conduct a thorough study of the local crab, bottomfish and juvenile salmon use of the Pt. Sherman area. Without this survey the EIS's assessment of marine impacts is speculative.

8.1

8.2

8.3

8.4

A-10

We also feel that should a tailings dam be needed that a waste-water treatment plant be built so as to not allow discharge of any pollutants into Lynn Canal. We believe that the tailings should be put back into the mine. This would greatly reduce visual and water quality impacts and eliminate the need altogether for a tailings dam. And furthermore, that dry tailings disposal for tailings be utilized that cannot be back-filled.

The cumulative impacts of the development of the Kensington mine needs to be assessed, including but not limited to the effect of the population increase and social needs of the community and that the Kensington mine venture should be responsible for the additional costs incurred as a result of the population increase.

We hope that you will pay great attention to our requests for preserving what we feel is the most beautiful and sensitive area of Southeast Alaska.

Very truly yours,

Louise v Oscar Steinberg
Louise and Oscar Steinberg



GLACIER BAY SEA KAYAKS

P.O. Box 26
GUSTAVUS, ALASKA 99826
(907) 697-2257

JUNEAU
RANGER DISTRICT

JUN 26 1991

DISIRICI RANGER
DEPUTY RANGER
TLM
REC
F&W
BM
VIS

June 26, 1991

Ken Mitchell, Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau AK 99801

Hey There Ken!

I writing voice my opinion on the Kensington Gold Mine. I would like to see the comment deadline extended until October first, a postponement of the hearing until September or October in order to give people a chance to attend. The busy Tourism season is in full swing during July and August and many people are working many long hours and will not have the time or the energy to attend these hearings.

I would also like to see some other things go into effect before the mine is decided upon: a thorough study of local crab, bottomfish and juvenile salmon use of the area, a wastewater treatment plant required so none of the pollutants enter Lynn Canal, a full assessment to cumulative impacts of Kensington and A-J population increases. I also feel the mine should be required to backfill and put tailings back into the mine to further reduce the effect to the land. Use dry tailings disposal for the tailings that cannot be back-filled. This technique eliminates the need for a tailings dam, reduces surface impacts, and protects local creeks. Develop a long term plan for maintaining any tailings dam in perpetuity.

Thank-you for your consideration.

Sincerely,

Donna E. Kaden
Donna E. Kaden

9.1 Please see response no. 1.1.

9.2 Please see response no. 5.2.

9.3 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

9.4 Additional analysis has been done to assess cumulative effects from operation of both the Kensington and AJ mines. Please see Chapter 4 of the FEIS.

9.5 Please see response no. 7.4.

9.6 Please see response no. 7.5.



GLACIER BAY SEA KAYAKS

P.O. Box 26
GUSTAVUS, ALASKA 99826
(907) 697-2257

JUNEAU
RANGER DISTRICT

JUN 01 '91

DISTRICT RANGER
DEPUTY RANGER
REC
F&W
BM
VIS

June 26, 1991

Ken Mitchell
Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau AK 99801

Hey There Ken!

I am writing to voice my opinion on the Kensington Gold Mine. I would like to see the comment deadline extended until October first, a postponement of the hearing until September or October in order to give people a chance to attend. The busy Tourism season is in full swing during July and August and many people are working many long hours and will not have the time or the energy to attend these hearings.

10.1

10.1
Please see response no. 1.1.

10.2

10.2
Please see response no. 5.2.

10.3

10.3
Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

10.2

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10.6

I would also like to see some other things go into effect before the mine is decided upon: a thorough study of local crab, bottomfish and juvenile salmon use of the area, a wastewater treatment plant required so none of the pollutants enter Lynn Canal, a full assessment for cumulative impacts of Kenning and A-J population increases. I also feel the mine should be required to backfill and put tailings back into the mine to further reduce the effect to the land. Use dry tailings disposal for the tailings that cannot be back-filled. This technique eliminates the need for a tailings dam, reduces surface impacts, and protects local creeks. Develop a long term plan for maintaining any tailings dam in perpetuity.

Thank-you for your consideration.

Sincerely,

Kata Berg
Kata Berg

10.6

10.6
Please see response no. 7.5.



GLACIER BAY SEA KAYAKS
P.O. Box 26
GUSTAVUS, ALASKA 99826
(907) 697 2257

JUNEAU
RANGER DISTRICT

JUN 27 1991

DISTRICT RANGER _____
DEPUTY RANGER _____
TLM _____
REC _____
F&W _____
BM _____
VIS _____

June 27, 1991

Ken Mitchell, Juneau District Ranger
U.S. Forest Service
8495 Old Dairy Road
Juneau AK 99801

Dear Ken,

This letter is to voice my concern about the Kensington Gold Mine. I oppose this for health, land and aesthetics reasons.

The land from the mine will be permanently damaged, scarred the original beauty will never again be the same. I can not imagine that 20-30 million tons of "toxic tailings" can be good for the environment. The cyanide-laced water can not be good for the water table from which many people may be effected. I feel that the environmental concerns are something for you to take into serious consideration. Along with the possibility that if the state of Alaska gains a reputation of a scarred land with mines ruining the natural beauty we will soon begin to lose the revenue the state gains from tourism.

Thank-you for your consideration.

Sincerely,

Corrine Fulwider
Corrine Fulwider

11.1

The impacts of tailings on ground water quality are displayed in Chapter 4 of the DEIS. No impacts on ground water quality are anticipated.

11.2

Please see response no. 4.3.

12.1

12.1
Please see response no. 1.1.

JUNE 27, 1991

DEAR WHOEVER: RE: KENSINGTON MINE
SLOW DOWN!

We are in the middle of our
intense summer gillnet season. Your
hearing dates are on Thursday when gillnetters
could attend if they are fishing these areas that
week. You need to extend your hearing and
input dates. Many people make their living
from the Lynn Canal fishing. I have
grave concerns re mine development
in major salmon watersheds.

JUNEAU

RANGER DISTRICT

JUN 27 1991

Sincerely,

Karen McCullough

FPO TARA

PO 707

Petersburg, Alaska

99833

DISTRICT RANGER _____
DEPUTY RANGER _____
TLM _____
REC _____
F & W _____
BM _____
VIS _____

PS. PT SHERMAN IS A FOCAL POINT
FOR DRIFTS FOR FISHERMAN I
FORSEE PROBLEMS.

5508 Flagler St.

Metairie, LA 70003

June 28, 1991

JUNEAU

RANGER DISTRICT

JUL 02 '91

Janean Dist Ranger Van Mitchell

U.S. Forest Service

8465 Old Dairy Road

Juneau, AK 99801

DISTRICT RANGER
DEPUTY RANGER
TLM
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VS

Dear Ranger Mitchell:

I am writing to express my concern about the Kensington gold mine located between Haines and Juneau near Lion's Head Mountain. It is my understanding that there are serious problems with the mine as proposed in the draft EIS.

I am asking that the Forest Service and EPA extend the comment deadline until October 1 and that the company be required to:

1. Conduct thorough studies of local bottomfish, crab, and juvenile salmon use of the Pt. Stroman area.
2. Build a wastewater treatment plant (if a tailings dam is needed) and not allow discharge of any pollutants into Hymn Canal. The

13.1

Please see response no. 1.1.

13.2

Please see response no. 5.2.

13.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

technology exists today to accomplish this.

3. Fully assess the impact of Kensington and A-T population increases on both Natives and Gwich'een.

4. Pay the cost of added social services in the area.

5. Backfill, or put Tailings back into the mine. This would greatly reduce mineral and water quality impacts and eliminate the need for a Tailings dam.

6. Use dry Tailings disposal for Tailings that cannot be back-filled to eliminate the need for a Tailings dam, reduce surface impact, and protect local creeks.

7. Develop a long-term plan for maintaining any Tailings dam in perpetuity.

I have visited this area of Alaska in the past and am very concerned about the mineral and environmental impact of a poorly planned project in the spectacular Ligon Canal. Please consider the people of the United States that you represent and generations to come when you are finalizing the plans for this project.

Sincerely,

Judy Thompson

13.4

13.5

13.6

13.7

13.4

Additional analysis has been done to assess cumulative effects from operation of both the Kensington and AJ mines. Please see Chapter 4 of the FEIS.

13.5

Please see response no. 5.4.

13.6

Please see response no. 7.4.

13.7

Please see response no. 7.5.

16995 Glacier Highway
Juneau, Alaska 99801
June 29, 1991

Dear Mr. Mitchell,

I have received the DEIS on Kensington Mine, an area I have visited, and wish to express my concerns about the proposed project. I don't think there is time to adequately respond to the proposal by August 1 and request that the Forest Service and EPA extend the deadline for comments until October. Many concerned people are on vacation and unable to participate in the hearing process. Furthermore, many additional studies should be conducted to determine the use by crab, bottomfish and juvenile salmon of the Pt. Sherman area.

If the mine proceeds it should be done only if there is no discharge of pollutants into Lynn Canal. Tailings should all be returned to the mine tunnels eliminating the need for a tailings dam and preserving the unspoiled beauty of the area.

The mine should not even be considered unless it pays its way in the city of Juneau. Factors of housing, schools, recreation and other basic qualities of life must be carefully considered before the approval of a mine. Unless and until a private

14.1

14.1

Please see response no. 1.1.

14.2

14.2

Please see response no. 5.2.

14.3

14.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

14.4

14.4

Please see response no. 7.4.

14.5

14.5

Please see response no. 5.4.

venture, the Kensington Mine, can prove its ability to have no adverse effects on the Juneau community, it should be resisted at all costs.

Processing minerals from the Kensington may be counter productive. Tourism is a highly significant industry in Alaska, the Mecca for tourists around the world. Every effort should be made to enhance Alaska's natural beauty and to preserve the integrity of our homeland.

Sincerely,

Judith Marie

JUNEAU
RANGER DISTRICT

02 '91

DISTRICT RANGER _____
DEPUTY RANGER _____
TLM _____
REC _____
F & W _____
BM _____
VIS _____

June 29, 1991

Dear Mr. Mitchell:

Re: Kensington Gold Mine

I enclose you to extend the comment deadline until Oct 1, and to require the mining company to:

1. Conduct studies of local fish bottomfishes previous to damming of the St. Germain area. With out those the FEIS assessment of marine impacts is speculative.
2. Build a wastewater treatment plant (if a tailing dam is needed) & not allow discharge of any pollutants into Lynx Camp.
3. Fully assess cumulative impacts of Kensington and A-5 population increase.
4. Pay for the cost of added social services including alcohol, drug & drug treatment, day care

A-19



15.1 Please see response no. 1.1.

15.2 Please see response no. 5.2.

15.3 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

15.4 Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

15.5 Please see response no. 5.4.

15.6 Please see response no. 7.4.

15.7 Please see response no. 7.5.

15.6

15.7

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2. Build a wastewater treatment plant (if a tailing dam is needed) & not allow discharge of any pollutants into Lynx Camp.

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4. Pay for the cost of added social services including alcohol, drug & drug treatment, day care

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6. Build a wastewater treatment plant (if a tailing dam is needed) & not allow discharge of any pollutants into Lynx Camp.

7. Fully assess cumulative impacts of Kensington and A-5 population increase.

8. Pay for the cost of added social services including alcohol, drug & drug treatment, day care

Point Adolphus Seafoods

Gourmet Quality Alaskan Seafoods

P.O. Box 63 • Gustavus, Alaska 99826 • (907) 697-2246

JUN 05 '91

DISTRICT RANGER _____
 DEPUTY RANGER _____
 TLM _____
 REC _____
 F&W _____
 BM _____
 VIS _____

James R. Mackovjak
 P.O. Box 63
 Gustavus, Alaska 99826
 June 30, 1990

Juneau District Ken Mitchell
 U.S. Forest Service
 8465 Old Dairy Road
 Juneau, Alaska 99801

Dear Ken:

This letter is in regard to the proposed Kensington mine, which, especially in its current conception is just another example of how certain individuals are willing to sacrifice the long-term health of our environment for comparatively short-term financial gain. I worked on a salmon tender in Lynn Canal for perhaps five years in the 1970's and was very impressed with that area. In my current capacity as a buyer and seller of Alaskan seafood I am well aware that one of the few things we really have going for us is the actual and perceived wholesomeness and naturalness of our products. If, as is likely, Lynn Canal becomes polluted from mine tailings, we are directly damaging the marketability of our fishery products.

Personally I feel that our technology has far outstripped our ability to manage it, and that as a nation we would be better off to wait at least a generation before we initiate any new projects which substantially affect our environment. In the case of the Kensington mine, the gold from it would really have very little use. Most of it is just hoarded--if we would limit our production of gold to that which is consumed in industry, the hoard would just increase in value (supply/demand). My guess is that all of the hoarded gold in the world is worth a certain amount, despite how much there is.

At any rate, I urge the Forest Service to conduct thorough studies of the local crab, bottomfish and juvenile salmon use of the Pt. Sherman area. I also urge the Forest Service to demand that a wastewater treatment plant at the Kensington mine and not allow any pollutants to be discharged into Lynn Canal. Additionally, I urge to Forest Service to consider backfilling to tailings back into the mine and also to use a dry tailings disposal.

As ever,

Jim Mackovjak

P.S. I took some guests over to Pt. Adolphus several days ago to view the whales there. I didn't count them but there were perhaps six clearcuts at Pt. Couverden which were clearly visible as ugly scars.

16.1
Please see response no. 4.2.

16.2
Please see response no. 5.2.

16.3
Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

16.4
Please see response no. 7.4.

16.1

16.2

16.3

16.4

HAINES BOROUGH

P.O. Box 1209 • Haines, Alaska 99827 • (907) 766-2711

JUL 03 1991

July 1, 1991

USDA Forest Service
Wildlife & Fisheries Unit

U. S. Department of Agriculture

Forest Service
Regional Office
709 W. 9th Street
Juneau, AK 99801CORRESPONDENCE CONTROL NO.: 510 TO: Chatter
RESPONSE MUST BE MAILED BY: 7/19/91
SIGNED BY: PS-AT RP
OOB TO: RECONSTRUCTION

Hello.

At our June 18th, 1991 Regular Borough Assembly meeting, I was instructed to convey the following concerns and requests regarding the Kensington Mine project:


1. The Haines Borough is very concerned about the efficacy of the proposed discharge into the Lynn Canal.

2. The Assembly requests that the public comment period be extended 60 days so that our working local fishermen may have adequate time to comment and that the Haines public meeting be delayed until after the gillnet season.

3. That there be no permitting until adequate baseline studies have been completed for fish, wildlife and oceanography.

Thank you for your attention to this matter.

Sincerely,


Frederick L. Shields
Haines Borough Mayor

17.1

Please see response no. 1.1

17.1

A-21

17.2

Please see response no. 5.2.

17.2

CC: Alaska Department of Fish & Game - Habitat Division
Juneau City & Borough Planning Commission

RECEIVED

JUL 03 1991

REGIONAL FORESTER
FOREST SERVICE
JUNEAU, ALASKA

369 S. FRANKLIN STREET, SUITE 200
JUNEAU, ALASKA 99801
(907) 463-3466 OR 463-4453
FAX (907) 463-4961

July 2, 1991

Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, AK 99801

Dear Mr. Mitchell:

I have been attempting to review the Kensington Gold Project DEIS and have some general comments.

- ° The comment period, June 1-August 1, falls in the peak of the tourist season, when I am already occupied seven days per week, 12 plus hours per day. This is the worst time for myself, others in the tourism industry, and, I expect, those in the fishing industry. All of us may be directly impacted by this project.
- ° The physical format of the document (horizontally bound legal-sized pages) makes it incredibly uncomfortable and ungainly to read, as does page after page of green ink. In addition, sans serif type is not well suited to lengthy documents.
- ° I have not been able to locate an index to allow me to target areas of the DEIS of particular concern to my business. There is not even a comprehensive table of contents to allow easy access to materials.
- ° Finally, your July 11 public hearing is unlikely to be well attended. Not because there is not concern over the reopening of the mine, but because Juneau residents are working jobs in the field, are kayaking, and otherwise occupied. Summer hearings are not realistic in Juneau.

I request that the Forest Service: 1) extend the comment period through October 15 to allow a month after tourist/fishing season for public review of the document; 2) the public hearing be held in early October; 3) an index and comprehensive table of contents be prepared and made available to the public at least one month before the comment deadline; and 4) that the Forest Service establish document format standards which ensure

that the public is not faced with an ungainly, difficult to read document such as the Kensington DEIS again. Were it not for the trees and other resources involved, I would ask for a reprint.

In "Caring for the Land and Serving People," I hope that you are responsive to my concerns.

Sincerely,

Karla Hart

Karla Hart Managing Partner

cc: Southeast Alaska Conservation Council
John Halterman, Chair, Juneau Planning Commission

JUNEAU
RANGER DISTRICT

JUL 23 1991

DISTRICT RANGER
DEPUTY RANGER

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
Please see response no. 1.1.

18.2

The FEIS includes an Index and Table of Contents.

18.3

The FEIS is printed on standard 8.5 x 11 inch format. It is printed in two volumes to make it less cumbersome. The Chatham Area has a printing advisory committee. We have forwarded your comments to them.

 Richard C. Wilson
211 Nimitz Dr
Des Plaines IL 60018 • 4051

16. E. L.

Ray M. Mitchell,

MS. A. 9. 2. 10. 17
I am writing to express my
concern about the devastation that will
take place to Lynn Canal if the proposed
Kensington gold mine chapt. E. 115. is
explored.

ask the following:

1. Extend the present comment deadline to October 1 and postpone the July hearings until September when needed can attend.
2. Conduct thorough studies of the marine life use of the Pt. Sherman area.
3. Build a wastewater treatment plant if a tailings dam is needed. There should be no discharge of pollutants into Lynnhaven.
4. Fully assess cumulative impacts of Kemungton and A-T population increases. Pay the cost of added social services such as schools, day care, + alcohol/drug treatment.

19.5 [5 "Backpedal" - I put talking & back into no more.
This would eliminate the need for a talking drum.

It's up to the Forest Service to see to it that all environmental, and health impacts are addressed.

Sincerely,
Richard C. Wilbur

19.1

Please see response no. 1.1.

19.2

Please see response no. 5.2.

19.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

19.4

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

19.5

Please see response no. 7.4.

P.O. Box 392

JUNEAU, Alaska 99801

RANGER DISTRICT 7/13/41

J-0791

Juneau District Ranger Ken Mitchell

U.S.F.S.

8465 Old Dairy Rd

Juneau, AK 99801

Dear Mr. Mitchell,

DISTRICT RANGER
DEPUTY RANGER
FILM
REC
CIVIL
BIA
W
VIS

We are writing out of concern about the proposed Kensington mine near Lynn Canal. We request that in order to permit full public participation in the EIS process, the comment deadline for the draft EIS be extended from August 1 to October 1 and that the July hearings be postponed to September.

We also request that the following measures be required before operations are permitted to begin at the Kensington mine:

Tailings Disposal - (1) backfill should be the preferred method of waste disposal; (2) dry disposal should be used for tailings that cannot be backfilled; (3) long-term maintenance plans should be developed to ensure the stability of any tailings dam that is required; (4) A technologically advanced wastewater treatment plant should be built if a tailings dam is needed - this plant should be adequate to remove all pollutants from any effluent into Lynn Canal

Marine Impacts - biological studies on impacts of mining on economically important shellfish and finfish in the Pt. Steman area should be required in the final EIS.

Social/Economic Impacts - (1) the EIS should assess the impacts of population increases in Juneau from both the Kensington and A-J mines; (2) Kensington Ventures should be required to pay the cost of all additional social services that must be added because of the mine.

Sincerely,
T. H. Kelle Gail Johnson
Robert Steele Gail Tagher

- 20.1 Please see response no. 1.1.
- 20.2 Please see response no. 7.4.
- 20.3 Please see response no. 7.5.
- 20.4 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.
- 20.5 Please see response no. 5.2.
- 20.6 Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.
- 20.7 Please see response no. 5.4.

JUNEAU
RANGER DISTRICT

JUL 03 1991

DISTRICT RANGER
DEPUTY RANGER
TLM
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F & W
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VIS

To: Mr. Mitchell;

We wish to express to you our deep concern about the potentially destructive mining development of the proposed massive Kensington mine at Pt. Sherman in Lynn Canal.

Many flaws need to be addressed and resolved, obviously, before the mining venture will fly.

However, let me emphasize, that the present comment deadline of Aug 1 is totally unrealistic because it simply does not allow adequate time for a thorough assessment and review of vital concerns.

We call for an immediate 2 month extension. We want to see an environmentally responsible project at Kensington, not yet another ecological screw-up resulting in irreversible negative impacts on undoubtedly one of the richest salmon producing areas in southeast Alaska.

Again, we strongly urge a comment deadline no sooner than October 1, 1991.

Cordially and sincerely
(Mr. & Mrs.) Philip A. Hoffman

21.1

21.1

Please see response no. 1.1.

Janet A. Nielsen
PO Box 9116
Wrangell AK
99791-29
July 4th 1971

Juncoan District Judge Ken Mitchell
U.S. Forest Service
8465 Old King Rd
Juncoan AK 99801

Dear Mr Mitchell

Re: proposed Kensington gold mine
I am very concerned about the impact such a large mine would have on the fisheries in Juncoan Canal. As a commercial fisherman, my livelihood depends on clean water, for ultimate spawning. The Kensington dropt EIS proposal fails short in researching Pt Sherman's bottomfish and cut as well as juvenile salmon. To keep the water in Juncoan Canal able to support our fishing industry, a wastewater treatment plant would be necessary to keep pollutants out of the canal, or if a tailing dam is not build, put the tailing back into the mine's backfill. In any case a long term plan for maintaining any tailing dam in perpetuity is necessary.

The impact on Haines, and small communities would also be great. The proposal needs to fully address the cumulative impact of Kensington and A-S population increases. Also the cost for added social services, such as schools, already in treatment & day care needs to be paid for by this proposed mine.

In conclusion, I ask that you extend the comment deadline until Oct 1st. You know how many Alaskans make their annual brochure in the summer. They shaped at least have the opportunity to comment. I hope the Kensington mine does not have to be. If it does, make it this. Thank you, sincerely, Janet A Nielsen
cc U.S. E.P.A.
Juncoan Planning Commission

22.1

Please see response no. 5.2.

22.2

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

22.3

Please see response no. 7.4.

22.4

Please see response no. 7.5.

22.5

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

22.6

Please see response no. 5.4.

22.7

Please see response no. 1.1.

22.1

22.2

A-26

22.5

22.6

22.7

Box 1785
Wrangell, AK
99929

JUNEAU
RANGER DISTRICT

JUL 12 '91

Juneau District Ranger
U.S. Forest Service
5465 Old Dairy Rd.
Juneau, AK 99801

DISTRICT RANGER
DEPUTY RANGER
TLM
REC
F & W
BM
VIS

July 6, 1991

Dear Mr. Mitchell:

I'd like to comment on the Forest Service Draft EIS for the proposed Kensington gold mine on Lynn Canal. First, I think it is essential that you extend the comment deadline at least until October 1st.

Commercial fishermen need ample opportunity to respond to the mining proposal since it has high potential to affect their livelihoods — and fishermen are now in the midst of their season, many far offshore and out-of-touch. Likewise, the public hearings should be held in September or October.

I do not believe this proposal allows for adequate protection of the land, water, or wildlife, either during operations or after completion. The discharge of pollutants into prime fishery and wildlife-rich waters of Lynn Canal is totally unacceptable — not only does it demonstrate complete disregard for the health of the environment, but it also plainly exceeds federal and state standards for levels of cyanide and heavy metals. There is no reason why Kensington can't build a treatment plant or use a

23.1

Please see response no. 1.1.

23.2

Please see response no. 7.4.

23.1

A-27

23.2

23.2

dry-tailings disposal method that would at least reduce impacts on the surface and protect the watershed and Lynn Canal from the worst pollutants. The mine should be backfilled with tailings to reduce eventual visual and water quality impacts. The tailings dam as proposed does not sound acceptable at all — the risks to the environment are far too high; the method of dealing with tailings should not be permitted.

23.3

Finally, I believe there should be thorough studies made of all marine life in the Pt Sherman Area so the full impact of any mining activity can be realistically assessed.

It saddens me to see that the lure of gold still blinds men to the real treasures of life on this earth.

Sincerely,

Chae Hanson

23.3

Please see response no. 5.2.

H. I. DEMERATH
BOX 233
GOLDEN EAGLE, IL 62036

JUNEAU
RANGER DIST
JUL 15 9
DISTRICT RANGER
DEPUTY RANGER
FILM
REC
W
VIS

July 7, 1991

Dear Sir:

My husband and I spend our summers in Juneau and travel the Lynn Canal. We greet your attention to our plea.

1. Extend the present comment deadline (August 1) for 2 mos.
2. Post phone July hearing until Sept when, when people can attend.
3. Fix some of the big flaws with the Kensington Design.
4. Attend and speak at the Kensington hearings in your area.

We must save Lynn Canal from destructive mining development.

Sincerely,
Dr. & Mrs. Demerath

24.1

Please see response no. 1.1.

24.2

The DEIS hearings were well attended and much testimony was given. Approximately 150 people attended the Juneau hearing with 30 people giving testimony. Over 80 people attended the Haines hearing where 34 people testified.

25.1

Dear Mr. Mitchell,

I urge you (SSFS) to correct the dead-
line for public comment on the draft
single theme draft EIS by at least
2 months (October) to allow a more
reasonable period of review & include
many who do not in summer vacation.
I am concerned that environmental
impact of this proposed mine may be
overlooking to fisheries, wildlife habitat
and local water quality.

Sincerely, Muelign Kund
A-30

25.1

Please see response no. 1.1.

Box 344

Tahketna, AK 99676

July 8, 1991

Alaska Survival Box 344
Tahketna, AK 99676
TO District Manager of Juneau
Ken Mitchell

This regards the FS's
draft EIS on the proposed
Berington Gold Mine. This
draft EIS is seriously flawed.
1. There is not adequate
studies on the impacts on the
marine (fisheries) environment,
cumulative impacts for socio-
economic & environmental
2. No consideration of a
hazardous spill.

Also this is to urge you to
3. Extend public comment period
through November including
holding public hearings in
September instead of July.

This proposal deserves serious
responsible consideration. It makes
important fisheries, quality of life
of the area communities.
Any development should be
totally environmentally sound
no matter what the cost.
4. There must be a requirement

for a wastewater treatment plant
pay for necessary additional
social services for communities
impacted, the tailings must be put
back into the mine.

Becky Long for Alaska Survival

26.1

Please see responses no. 5.2 and 5.3.

26.2

Please see the discussion on material spills on pages 4-17 to 4-18, 4-19, 4-21 (2 places), 4-33, 4-37 and 4-72 in the DEIS. This discussion has been carried over to the FEIS.

26.3

Please see response no. 1.1.

26.4

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

26.5

Please see response no. 5.4.

26.6

Please see response no. 7.4.

26.4

7905 Agnes Ave #10
North Hollywood
CA. 91605

July 8, 1991

Dear District Ranger Mitchell,

I am very concerned about the draft EIS for the Kensington Mine. The proposal in its current form spells disaster for the Lynn Canal area.

First of all, a thoroughly detailed study of the effects of the "mixing zone" on the marine life needs to be done. Discharging large volumes of highly toxic substances into the waters is going to have a very negative impact on life in the whole region and this is very alarming.

Instead of destroying all kinds of habitat with a massive and relatively unstable tailings dam, the company should be required to backfill and put the tailings back into the mine. Any tailings which cannot be back-filled should be disposed of dry.

Other adverse impacts will be to the people and the infrastructures of the surrounding communities. As it stands, the Kensington proposal is highly flawed and drastic changes need to be made if the project is not to be a nightmare for all concerned.

Sincerely,
Cosmo Bloom

27.1

Please see response no. 5.2.

27.2

Please see response no. 7.4.

**National
Bank of Alaska**



ALASKA OFFICE P.O. Box 1100 Anchorage, Alaska 99511 (907) 586-3204

JUNEAU

RANGER DISTRICT

United States Department of Agriculture
Forest Service

Region 10, Tongass National Forest

Juneau Ranger District

9485 Old Dairy Road

Juneau, Alaska 99801

Attention: Kenneth E. Mitchell

District Ranger

28

JISHICI HANGER

DEPUTY RANGER

REC _____

FILE _____

AW _____

MS _____

Re: Kensington Testimony

presented 7-11-91

Dear Mr. Mitchell:

Concerns have been raised regarding the desire of local banking institutions to finance the additional housing which might be needed as a result of the Kensington. It is first of all uncertain that the Kensington opening would cause a high likelihood of state government employment reductions, and that the miners will have the ability to live elsewhere, in southeast due to the planned work schedule. However, in order to be conservative in our view of the future, we can assume a significant influx of individuals and families seeking housing.

The Juneau commercial banking industry has met the housing needs of this community in the past, and will continue to do so in the future. At this point in time, the National Bank of Alaska is financing several owner-builder as well as spec units in town, and we will continue to do so as long as each project meets our standard requirements. These requirements have not changed dramatically over time, rather the dynamics of the local economy have changed. Variables such as the relationship of regional values to construction costs dictate what lending is feasible.

Funds ARE available now for construction lending, and when the need arises and the economics are sound, lending WILL occur. At the present time, the cost of construction still generally exceeds the current values as determined by appraisal. When the housing need is sufficient to negate that cost differential, homes will be built, and built in sufficient quantity to satisfy economically sound demand.

It should also be noted that estimated mine life is simply not a consideration by our Bank with regard to lending to individuals for purchase of personal residences.

We enjoy the uniqueness of Juneau, and do not see it threatened by opening of the Kensington, but in fact see mining as the kind of economic diversity necessary to maintain the lifestyles we enjoy. The banking institutions of Juneau stand ready to provide the funding needed to react to the changes mining may require, thereby assisting our community to develop a more diverse future beyond that of declining state government.

Sincerely,

Larry J. Cooper
Vice President
Manager

28.1

Thank you for your comments.

29.1

Larry Pepper
P.O. Box 211043
Auke Bay, AK. 99821
July 11, 1991

Ken Mitchell, Juneau District Ranger
8465 Old Dairy Rd.
Juneau, AK. 99801

The Environmental Protection Agency (see Appendix D Draft NPDES Permit) has proposed effluent limits for the project based on federal standards. The Alaska Department of Environmental Conservation has not yet determined whether the effluent limits set for the project meet State standards for receiving water quality. No discharge will be allowed that does not meet both State and federal standards.

29.2

Please see response no. 5.2.

29.3

Please see response no. 7.4.

29.4

Please see response no. 7.5.

29.5

Please see response no. 1.1.

Mr. Mitchell:

I would like to comment on the Forest Service's draft environmental Impact Statement (EIS) regarding the Kensington Mine on Lynn Canal, near Juneau, AK. I have some serious concerns about the extent that this Impact statement will really "protect" the environment:

1) The wastewater treatment plant's discharge of cyanide, arsenic, cadmium, copper, zinc, lead, and selenium via the "mixing zone" is a totally unacceptable way dispose of the tailings. Prime fisheries will be polluted. The Pt. Sherman area serves as a major corridor for salmon returning to spawn in rivers of the upper canal. In addition, these levels of discharge exceed federal and state standards.

2) Please conduct thorough studies of local crab, bottomfish, and juvenile salmon use of the Pt. Sherman area. Without these, the EIS's assessment of marine impacts is speculative.

3) "Backfill", or put tailings back into the mine.

4) Use dry tailing disposal for tailings that cannot be back-filled. This technique eliminates the need for a tailings dam, reduces surface impacts, and protects local creeks.

5) Develop a long-term reclamation plan for maintaining the tailings dam in perpetuity.

In order that public be given ample opportunity to comment I ask that you extend the present comment deadline (August 1) at least two months and continue hearing into the fall when most people are in town.

Please give serious consideration to the above; a quality environment is not just a special interest group it is the lifeline to all living things!

Sincerely,


Larry Pepper

1412 Fourth St.
Los Osos, CA 93402-1606
July 11, 1991

Juneau District Ranger Ken Mitchell
U.S. Forest Service
8465 Dairy Rd.
Juneau, AK 99801

Dear Mr. Mitchell

As a frequent tourist who has been privileged to know the unique beauty and purity of the Turno Canal, I was greatly disturbed at the report of the destruction inherent in the proposed Kensington gold mine.

When so much irremediable damage has already been done to Alaska's ecology, it is of the most urgent importance that protective measures be taken to preserve all that remains, and that the Forest Service has the responsibility to be first and most vigorous in establishing and enforcing such measures.

Very sincerely yours,

Kathleen M. Kail

Kathleen M. Kail

30.1

Thank you for your comments.

30.1

July 11, 1991

Fallon Bl, Greenwood,
P.O. Box 1333,
Juneau, Alaska 99802

Ranger Ken Mitchell
U. S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Ken:

I writing concerning the Kensington Mine. First, I am requesting that the period for commenting be extended beyond the August 1 deadline until at least October. The Aug. 1 deadline for comments is not enough time for fisherfolk, and other residents, who are out town this summer to comment on this project. I was not able to attend the July hearing Juneau as I was out of town, and I know that many other people are vacationing who would want to comment on the Draft EIS. Please extend the process for commenting and hold hearings in the fall so that the people who will be impacted can give feedback to the Forest Service and the (E) Planning Commission.

As a twenty-six year resident of Juneau, I use the Berner's Bay area frequently going by staff and kayak to fish and camp up in the bay. As you know, because Berner's Bay is easily accessible for recreational use from Juneau and because it is a wonderful place to paddle up into on a weekend; it is heavily used by Juneau residents. I am very disappointed with the draft EIS. It does not address most of the important issues concerning a development of this size. These are my concerns:

1. The draft does not adequately address the impacts of this mine on the wildlife, fisheries and recreational uses of this area. I urge you to conduct a thorough study of the affects of this mine on the fisheries. (This includes the shellfish). I am concerned about the Black and Brown bear use of the Pt Sherman area and the whole northwest side of Berner's Bay. I have camped in the area many times and I have seen bears there, especially when the salmon are in the the fresh water streams. Bears travel up into Berner's Bay to feed in Jualin Creek and the other salmon spawning creeks along that side of the bay. The impacts on these animals should be fully understood so that the trade offs can be assessed before giving Cosur d'Alene mines a carte blanche to start digging

31.1

Please see response no. 1.1.

31.2

Please see response no. 5.2.

Potential habitat for brown bear does exist within the project area. Information gathered from meetings with the ADF&G and onsite field surveys indicate that brown bear use of this area is minimal. As indicated in the DEIS (pg 3-42), the ranges of brown and black bears generally do not overlap. Black bears are known to occur within the project area and potential impacts to black bear populations was a concern identified during early scoping meetings with the ADF&G. The Forest Service has used a habitat approach to assess potential impacts to black bear and other wildlife species (see pg 4-45 in DEIS). Loss of habitat and noise influences were projected to reduce the habitat capability of suitable habitat within the project area by approximately eight bears. Ongoing ADF&G radio-collar monitoring of black bears in the project area will be used to verify these projections if project development occurs.

The commitment by the Kensington Venture to incinerate garbage and develop a people/bear management plan in cooperation with the ADF&G will minimize the risk for loss of bears through bear/people encounters.

31.1

31.2

and dumping.

- 31.3** Please see the expanded discussion of water quality impacts and aquatic impacts in the FEIS. Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.
- 31.4** Please see response no. 26.2.
- 31.5** Please refer to the reclamation plan outlined in the Applicant Proposal (Appendix A, DEIS) and the expanded discussion of management, mitigation and monitoring in FEIS Chapter 2.
- 31.6** Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.
- 31.7** Please see the description of available social services in DEIS Chapter 3. The DEIS states that some services are currently not adequate for the population. The City and Borough of Juneau (CBJ), through their Large Mine permitting process, will address mitigation of socioeconomic impacts.
- 31.8** Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS. The addition of 1000 people to the Juneau population would add about 4% to the total population. Overall road congestion and other impacts would be expected to be proportional to the population increase.
- 31.9** Please see response no. 5.4.

2. The draft does not address the impacts of cyanide and heavy metal waste dumping; how the waste water will be treated. The present Kensington studies are not adequate to serve as a baseline for what the impacts will be or how they should proceed in the most environmentally sound way.

3. The risk of this project are too large to inadequately address them as this FIS does. What about spills of fuels and other toxic materials into Lynn Canal. Kensington already has had one spill and their history on preventing toxic spills does not sound great.

4. What are the reclamation requirements going to be to prevent the scar the mine will live on the mountainside along the ferry rides in southeast?

5. The FIS does not address the social impacts adequately. I live in downtown Juneau on 3rd Street. There is an increase of intoxicated men and men fighting with other men and with women. These are not the population of regular downtown "drunks" nor are they people I have ever seen before although the incidents of this are more frequent and seem to me to have been increasing for the last three years.

6. As an educator, I am aware of the critical needs young and adult citizens have in our community around the issues of alcohol, drug abuse and domestic violence. I often do consulting work in the area of alternatives to violence and at the present time the resources to provide adequate services are not available in the community or in the schools.

7. I am also concerned about the impacts on the whole area for traffic, hunting, increased domestic violence, alcohol abuse the impacts on the housing needs of community. On Thursday evening I was driving back into town from Fritz Cove Road around 10:30 PM. The traffic was dense. I commented to my friend who was riding with me, that I could not imagine what 800-1000 more people was going to be like on the highway. Also last week, driving to the University, I and several other cars were cut off at the Brotherhood Bridge by a speeding and recklessly driven one truck which forced the car ahead of me onto the shoulder of the road as he sped past in the merging lane.

Right now, it seems that Juneau City Borough and State of Alaska (ADFG, HSS and DEC) does not have adequate services to monitor adverse and illegal activities, provide direct service to families that will result from a project of this magnitude.

I appreciate the opportunity to comment on the Draft FIS. I urge you move the comment period to a later date, preferably October and really look at these impacts seriously. The Forest Service is supposed to be the agency looking out for the public's interest. I grew up in Idaho and I am very aware of how mining companies operate there. These companies are not concerned for the public interest and never have been. The Forest Service is legally required and philosophically mandated to protect all the resources for the public good. This Draft FIS isn't doing the job.

Sincerely yours,

Kay Greenwood

32.1
Please see response no. 1.1.

Dear Mr. Mitchell,
Please extend my
congratulations to you
to Sept. 1st. We are
holding our project so
things can be done
with less environmental
damage.

Thank you.

Louie H. Heller
Rt 1 Box 51
Ft. Ransom ND 58030

POSTAGE
NO 581
JUNEAU DISTRICT
RANGER
JUNEAU AK 99801

DISTRICT RANGER
DEPUTY RANGER
JUNEAU AK 99801

NAME
GIVEN

The illustrated "subaru" is a wagon with wheels of solid log
and made in Oregon. It is a very old vehicle and is the only
one of its kind. It is a very old vehicle and is the only one of
its kind. It is a very old vehicle and is the only one of its
kind. It is a very old vehicle and is the only one of its kind.
West Exhibited at Vesterheim, an historic complex in Decorah,
Iowa, operated by the Norwegian American Museum.

32.1

Ken Mitchell, District Ranger
U.S. Forest Service
6465 Old Dairy Rd
Juneau, AK 99801

Dear Mr Mitchell

We are commenting on the draft EIS of the proposed Kensington gold mine on Lynn Canal between Haines and Juneau, Alaska

We strongly oppose the discharge of any pollutants into Lynn Canal. All water should be completely cleaned by a wastewater treatment plant before it is discharged. There should not be a need for a toxic mining zone if all toxic materials are removed prior to discharge of water.

We believe that all tailings should be replaced in the underground mine after gold and other ores are removed. This would eliminate the need for a tailings dam, would reduce possible toxic chemical and heavy metal contamination of the land and surrounding waters, and would be aesthetically more acceptable.

The EIS assessment of impacts on marine animals does not rest on a secure foundation of information. As a diver, I would like to know that studies of crab in the Pt. Sherman area are well understood before they are impacted. I should hope that there is little impact. Furthermore, we need to know more about how salmon and bottomfish use the Pt. Sherman area before impact assessment is possible.

There is a need for a long term reclamation plan. In particular, if a tailings dam is constructed, its maintenance must be accounted for.

There are proposals for developing two separate large mining operations in the Juneau region simultaneously. What are the cumulative effects of both these mines? What are the combined economic, social, population impacts on Juneau? Who will pay for these impacts? Who will pay for the increased day care and school costs? Who will pay for the increased need for drug and

alcohol treatment facilities? Who will pay for the increased electrical demand that will exceed the present hydroelectric capacity? Who will pay for the increase in social services and police and fire protection needs? It seems unfair for the present populace to subsidize the mining operation through these increased costs. The mining company should pay for all of these additional costs.

Thank you for considering our concerns.

Sincerely yours,

Donald Hendry *Marjorie Fields*
Donald Hendry and Marjorie Fields

33.1 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

33.2 Please see response no. 7.4.

33.3 Please see response no. 5.2.

33.4 Please see response no. 7.5.

33.5 Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

33.6 Please see response no. 5.4.

MR. Ken MITCHELL
 Junior District Ranger
 U.S. Forest Service
 Denver.

July 15, 1981

I've spent considerable time living in the
 Juan-Thomas area and am very familiar
 with the nature between the two. It comes
 as a surprise to me that somebody wants
 to put a silver mine on Juan Creek.
 There is especially true with the price of
 silver being what it is. I have 400
 ounces of silver that I have held for 10-15
 years because I cannot get out of it
 what I paid.

The point I am trying to make is
 it appears that the only way that the
 Kensington mine can be feasible is at
 the expense of the environment. Put the
 mine in without consideration to the environment,
 it may save the Company money but we,
 the public, will pay the price in the
 future if the coal is polluted.

Before the Kensington mine is allowed to
 proceed this ought to be a study of the
 local area, both public and private owners are

34.1

Please see response no. 5.2.

34.1 of the PT. Summary over. To my knowledge this hasn't been done, then can you grant permission to operate if we don't, because the impact.

34.2 There should be a water treatment treatment plant with no discharge of tailings into the Lynx Creek. God knows we have polluted most of the United States. Now, we learned yet that we cannot dump it will for monetary gain. I also wonder if we might not be exchanging the promise of a mine for a way of life & income from the fishing.

34.3 The tailings should be put back into the mine. We have enough places with more tailings that are not good for the environment or sight. The old former mine is one such example. In any case there shall be no tailings dam if possible. Monitoring ~~is~~ is the future is just looking for future environmental problems.

34.4 We need to also consider the impact of such a dam on the former three-fishing order. What additional social service will be needed & who will pay for them. We are looking at

34.2

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

34.3

Please see response no. 7.4.

34.4

Please see responses no. 5.3 and 5.4.

34.4] limited living space with new people.

34.5 I would like you to do what you can to extend the comment deadline on this project from August 1 to October 1, 1991 to give all interested parties an opportunity to comment so that the best decision can be made.

Thank you for your consideration

Robert J Smith
22301 Canille
Woodburn, Mich, 48183

34.5
Please see response no. 1.1.

July 15, 1991

Box 1001
Haines, Alaska 99827

Director, Water Division
U.S. Environmental Protection Agency
1200 6th Ave., WB-134
Seattle Washington 98101

Dear Protector of Our Nation's Waters:

I am writing to you out of grave concern for the quality of our environment from the development of the Kensington Mine, located north of Juneau. As an 11-year resident of Alaska, I have witnessed the debilitating effects of mining and logging operations that have been implemented without full consideration of long-term environmental impacts. Allow me to express 3 significant problems that accompany any further mining in the Point Sherman area: water quality, habitat integrity, and long-term environmental degradation.

As a former fisherman and long-time water sports enthusiast, I have personal knowledge of the waters around Point Sherman. This pristine area is known for its significant waterfowl populations, high sea mammal count, and abundant runs of salmon and halibut. The absurd notion held by the Kensington Venture that these very waters should be used for a "mixing zone" where toxic tailings containing high cyanide and heavy metals concentrations are released is short-sighted, detrimental, and downright ignorant of the local ecosystems. The high levels of discharge pollutants, especially copper, cyanide, and mercury will certainly have a negative effect on an area that is considered by local commercial fisherfolk to be a "breadbasket" within the Lynn Canal waters. Factories should not be allowed to discharge hazardous effluent onto a farmers' crops; the Kensington DEIS allows a huge mining concern to dump a killing mix of materials into waters considered rich with wild stock Alaska salmon. Tailings should be disposed of using the "backfill" technique which simply returns the waste back to the mine from where it was extracted. Tailings that cannot be backfilled should be subject to a "dry tailings disposal" process that would prevent leaching or any interaction with Lynn Canal waters or its watersheds.

As this mining venture will probably continue for years, particular attention must be given to limiting any impacts on the local ecosystem. Any study on marine life proposed in the DEIS seems superficial. Please consider detailed studies on local salmon, bottomfish, and crab, all of which are valuable to commercial fisheries subsistence users alike. Our families have lived here long before the mining operation and will stay for generations after the project is closed down. Please require a long-term reclamation plan for the tailings and any disturbed areas affected by Kensington. Cool heads and common sense are required if any sort of balance is to be achieved between local human and wildlife communities and the mine.

Sincerely,

Daniel L. Henry

35.1

The analysis in both the DEIS and the FEIS displays the impacts to aquatic life in Lynn Canal and concludes that there would be no significant impact on aquatic life in Lynn Canal under any action alternative. Please refer to Chapter 4. The purpose of the EIS is to display potential impacts of the project and the alternatives. If the project is approved, permits issued to the Kensington Venture would be the mechanisms to allow or disallow a discharge.

35.2

Please see response no. 7.4. Also, please note that merely placing the tailings in a dewatered impoundment would not, in the long term, prevent saturation of the pile, leaching and subsequent interaction with the waters of Lynn Canal.

35.3

Please see response no. 5.2.

35.4

Please see response no. 7.5.

Mr. Mitchell -

I urge you to take
any measures necessary to
minimize the environmental
impacts of Kensington.
Residents of Lynn Canal
need clean water and
abundant fisheries.
Thanks- Dan Henry

35.1

35.2

35.3

35.4



Jack C. Leighty, D.V.M.
President
P.O. Box 279
Huntingtown, MD 20639
Telephone & FAX: (301) 535-5870

The Southern Maryland
Audubon Society

July 15, 1991

Ken Mitchell
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

The Southern Maryland Audubon Society's 800 members are following the controversy regarding the gold mine that the Kensington Venture is proposing to establish between Haines and Juneau. The days when a potentially environmentally disastrous development like this could be approved, as this one is proposed, must be ended.

We ask that the Forest Service extend the comment period until October 1 and require Kensington Venture to:

1. Conduct Thorough studies of local crab, bottomfish, and juvenile salmon use of the Pt. Sherman area.
2. Build a wastewater treatment plant (if a tailings dam is needed) and not allow the discharge of any pollutants into Lyn Canal.
3. Fully assess cumulative impacts of Kensington and A-J mine population increases.
4. Pay the cost of added social services, including schools, alcohol and drug treatment, and day care.
5. "Backfill" or put tailings back into the mine.
6. Use dry tailings disposal of tailings that cannot be back-filled.
7. Develop a long-term plan for maintaining any tailing dam in perpetuity.

Echo Bay Mines and Coeur d'Alene Mines must be given to understand that environmental and social impact "free lunches" no longer exist. If they can't pay all costs of such potential impacts they must be prevented from beginning operations.

Sincerely,

Jack C. Leighty

Jack C. Leighty, D.V.M.
President, Southern Maryland Audubon Society

36.1

Please see response no. 1.1.

36.2

Please see response no. 5.2.

36.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

36.4

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

36.5

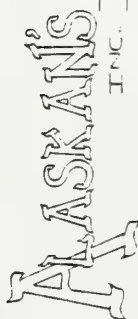
Please see response no. 5.4.

36.6

Please see response no. 7.4.

36.7

Please see response no. 7.5.



Fishing • Mining

INC.

Tourism • Logging

For Environmentally Sound Development

July 15, 1991 37.1

MEMO: TO ALL MEMBERS, COMMERCIAL ENTERPRISES AND
THE GENERAL PUBLICPURPOSE: TO OUTLINE THE CORPORATION'S POSITION IN
SUPPORT OF THE KENSINGTON MINE PROJECT

Alaskan's Inc. as a non-profit organization for environmentally sound development, has been closely following and studying the Kensington Mine Project, along with it's potentially positive economic impact on the Haines Community.

JUNEAU

RANGER DISTRICT

JUL 17 1991

DISTRICT RANGER
DEPUTY RANGERTLM
REC
F&W
EM
VIS

We note that after indepth study of the projects EIS, the Alliance for Juneau's Future, Inc. supports the project, with a modification that Haines be considered as a logical alternate bedroom community.

This memo briefly outlines our reasons for supporting the project and invites your public commentary concerning the project at the Thursday, July 18, 1991 meeting.

SUPPORT POSITIONS:

POSITION ANALYSIS
KENSINGTON MINE PROJECT

1. The concept of making Haines a bedroom support community for the project could result in Haines gaining 100 or more permanent working residents to our community. The mine workers would commute to the mine site and live in Haines. This would result in the following economic benefits to Haines:

37.1

Thank you for your comments.

a) Economic Diversity and Security:
 Alaskan's Inc. continues to stress economic diversity by supporting the tourist, fishing, forestry and now the mining industry. We recognize diversity as the key to our economic security and as such offers the best opportunity for our citizens to enjoy a healthy, beneficial life style.

b) Alaskan's Inc. has evaluated the impact of 100 new permanent residents and concluded that current services will not be over stressed to meet the new resident's requirements. This is largely due to the fact that in the past, services were supplied to residents employed in our two sawmills, tank farm, the fisheries and tourism related businesses. Unfortunately, some of these employment opportunities no longer exist, except in the remaining struggling sawmill, fishing, and tourism industries. Fortunately, we know the ability to survive remains intact. This fact signifies that with 100 new permanent residents, the tax base will increase, while demand for services can be met at current levels. This can result in lower tax rates for everyone, while strongly maintaining and supporting our current services. The best of two worlds!

c) Alaskan's Inc. believes the favorable impact that 100 permanent residents will have on our school system cannot be overstated!

School enrollment will improve and the tax base will increase.

The possible decrease of school enrollment is a serious concern of the community. The development of this mine could provide the stimulus that a healthy school system requires.

The Kensington Mine Project, generally meets Alaskan's Inc. required criteria for environmentally sound development and has identified no major environmentally adverse impacts. Therefore, our membership of 50 takes this opportunity to support the Kensington Mine Project.

We invite you to a public meeting on July 18th at 6 P.M. at the Chilkat Center concerning this project.

Alaskan's Inc. recommends and solicits your strong support for this worthy project.

Please attend this meeting and help secure Haines and your future.

F. P. Smith
Member

From 320 Riverside Drive, Apt. 14D
New York, N.Y. 10025

July 15, 1991

Mr. Ken Mitchell
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell,

I wish to express my concern over the draft environmental impact statement (EIS) on the proposed Kensington gold mine on the east side of Lynn Canal. I request that the Forest Service extend the comment deadline by at least two months.

The draft EIS is deficient in several regards:

- 1) It does not call for thorough studies of local crab, bottomfish, and juvenile salmon use of the Point Sherman area. Without such studies the assessments of marine impacts in the EIS is purely speculative.
- 2) It is essential that a wastewater treatment plant be built (if a tailings dam is needed) and that it not be allowed to discharge any pollutants into Lynn Canal. There is available technology to treat all discharges.
- 3) The EIS should require "backfill" or putting tailings back into the mine. This would reduce visual and water quality impacts and eliminate the need for a tailings dam.
- 4) The EIS should require dry tailings disposal for tailings that cannot be back-filled. This would eliminate the need for a tailings dam, thereby reducing surface impacts and protecting local creeks.
- 5) The companies (Echo Bay Mines and Coeur d'Alene Mines) should develop a long-term plan for maintaining any tailings dam in perpetuity.

I trust that you will give this matter careful consideration.

Yours sincerely,



Frank Smith

38.1

Please see response no. 5.2.

38.2

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

38.3

Please see response no. 7.4.

38.4

Please see response no. 7.5.



GLACIER BAY SEA KAYAKS

P O Box 26
GUSTAVUS, ALASKA 99826
(907) 697-2257

Ken Mitchell
Juneau District Ranger
US Forest Service
8465 Old Dairy Rd
Juneau, AK 99801
15 July 1991

Sear Ranger Mitchell;

I am writing out of concern for the proposed Kensington mine. It sounds to me like the draft EIS missed some very important points that desperately need addressing.

To begin with, how can you allow untreated water from the tailing pond escape into Lynn Canal? Especially since they will EXCEED state and federal standards? Beyond breaking the law, what about the impact on local fisheries? Where is the thorough study of marine impact? Heck, even the state Fish and Game says the studies are insufficient. It is criminal to allow such violations, especially since the technology exists to treat the discharge? At least force the companies to build a wastewater treatment plant.

Another major flaw involves the impact on the Juneau-Haines area. Where are the provisions to hire locally? What about the net deficit Juneau will suffer? Why not have the mine pay the extra social costs involved with bringing all the new people into the area? Have you thought about the impact on recreation in the area? Why can't the mining companies backfill the tailings into the mine? And how about the long term effects of the dam? What provisions are there for maintaining the dam into the future?

The bottom line here is that this is a HUGE proposal, desperately in need of serious and extended consideration. The deadlines you have set in no way facilitate public comment, especially given the summer release and deadlines that occur during the public's busiest time of the year. If you are seriously committed to a public comment period, at least extend it until the Fall.

Please respond to my questions. Thanks

Sincerely,

Doug Bridge
PO Box 26
Gustavus, AK 99826

39.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

39.2

Please see response no. 5.2.

39.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

39.4

Please see responses no. 5.3 and 5.4.

39.5

Please see response no. 4.3.

39.6

Please see response no. 7.4.

39.7

Please see response no. 7.5.

39.8

Please see response no. 1.1.

US Forest Service
8465 Old Dairy Rd.
Dunsmuir, CA 95821

7/16/91

40

I'm very concerned regarding the Kensington mine project. There seems to be many environmental issues that seriously need to be addressed. The main item on the top of the list is the dumping of my waste with toxic potential into the "sinking zone" in the Lynn Canal. Many people rely on the Fisheries from Queen, Haines and Skagway in the area. We own land and will live in Haines soon, my concerns are close to home.

I wish to request that the Forest Service and EPA extend comment deadlines to Oct. 1, 1991.

I also wish to request that the company be required to

40.1

Please see response no. 1.1.

40.2

Please see response no. 5.2.

1) conduct a thorough study of bed cabs, bottomfish and juvenile salmon use of the Pt. Sherman Area. This is a must as the EIS can only be speculative without it.

40.2

40.3

2) Build a waste water treatment plant (if a tailings dam is needed) and not allow the discharge of any pollutants into the Lynn Canal.

40.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

40.4

3) "Backfill," or put tailings back into the mine. This would greatly reduce visual and water quality impacts and eliminate the need for a tailings dam.

40.4

Please see response no. 7.4.

A-50

40.5

4) Use dry tailings disposal for tailings that cannot be back filled. This technique eliminates the need for a tailings dam, reduces surface impacts, and protects local creeks.

40.5

Please see response no. 7.5.

5) Develop a long-term reclamation plan for maintaining the tailings dam in perpetuity.

JUNEAU
RANGER DISTRICT

JUL 22 '91

Thank you
Sincerely

John A. Rosenthal
Karl F. Richter

RR #1, Box 887
Hinesburg, VT 05461
July 16, 1991

District Ranger Ken Mitchell
U.S. Forest Service
8465 Old Dairy Rd.
Juneau, AK 99801

Dear Mr. Mitchell,

I'm writing to voice some concerns I have about the proposed Kensington mine. The Forest Service and the EPA should not allow across Sherman Creek valley. Kensington Venture should be asked to consider less environmentally damaging tailings disposal alternatives to protect Lynn Canal and local creeks. Kensington Venture should also pay for the cost of thorough impact studies on marine life, and not be allowed to discharge any pollutants into Lynn Canal.

41.1

41.2

41.1

Please see response no. 7.4.

41.2

Please see response no. 5.2.

It is up to the Forest Service and the EPA to protect this natural resource for us, no matter what the economic gain from this mine might be. The gain is only momentary compared to the permanent ecologic damage that could result here. Please take the time to fully assess this project and move the comment deadline to October 1, 1991.

Sincerely,

Melissa Connor

Melissa Connor

Katya Kirsch
P.O. Box 521
Haines, Alaska 99827

July 17, 1991

Dear Mr. Mitchell,

The sockeye salmon fishing in the Point Sherman area is one of the best in Lynn Canal. Fishermen line up for hours for the honor of fishing there. There's always a sure catch near Point Sherman.

The Kensington Mine has great potential to destroy this multi-million dollar salmon run. A "mixing zone" must not be allowed. The idea of pumping pollutants into a salmon-rich habitat is absurd. If the Kensington Mine operates, it must not be allowed to pollute the Lynn Canal with toxics like cyanide, copper, and other heavy metals. A gold mine that operates for 10 to 20 years should not be allowed to pollute marine waters for decades.

Instead, a wastewater treatment plant must be built that allows zero discharge of pollutants into the Lynn Canal. Yes, a wastewater treatment plant would cost the mine company money, but that is the cost of doing good business.

The proposed tailings dam for Kensington has the potential of disaster for the Lynn Canal. Similar designs have failed in the past. The company has proposed one of the cheapest and least stable designs possible. Two active earthquake faults run through the area, threatening to unleash toxics from the tailings dam. Quakes greater than 8.0 on the Richter scale have been recorded. Heavy rainfall would certainly make the tailings dam overflow toxic wastes into the Lynn Canal.

Instead of a dam, tailings should be backfilled into the mine pits where feasible, and dry tailings disposal should be used for tailings that cannot be backfilled. If a dam is allowed, there must be a long-term plan to maintain the dam forever (a doubtful proposition).

Much more thorough studies of salmon, bottomfish, shellfish, and wildlife in the Point Sherman area need to be done before this mine operates. Studies so far have been very cursory and inadequate, according to the Alaska Department of Fish and Game. Goats and bears also need adequate protection from helicopter traffic and mining activities.

Please help protect our fisheries, our marine habitat, and other wildlife in the Point Sherman area. The Kensington Mine should only be allowed to operate if it can keep Lynn Canal in its present pristine state.

Sincerely,
Katya Kirsch
Katya Kirsch

42.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

42.2

The FEIS, in Chapter 3, describes recorded earthquakes in the region around the proposed project. These earthquakes, reasonable projections of other expected events, and design factors of safety were used in evaluating the stability of the proposed structure. The evaluation shows that the structure is stable under all reasonably foreseeable events. There are no known failures of modern dams using the design proposed for the Kensington Project. Furthermore, the constant, heavy rainfall in the area makes construction of a dewatered structure inherently more risky given the sensitivity of the tailings to moisture content during placement.

42.3

Please see response no. 7.4.

42.4

Please see response no. 7.5.

42.5

Please see response no. 5.2.

42.6

Please see the discussion of expected wildlife impacts in Chapter 4.

42.1

42.2

42.3

42.4

42.5

42.6

P.O. Box 1544
Juneau, Alaska 99801
July 17, 1991

U.S. Forest Service
8455 Old Dairy Road
Juneau, Alaska 99801

Dear Sirs:

This is a request to extend the comment deadline on the Forest Service's Kensington DEIS until October 1, 1991. In addition, I request that the Kensington Venture be required to do the following:

43.1

43.2

43.3

43.4

43.5

43.1
Please see response no. 1.1.

43.2
Please see response no. 5.2.

43.3
Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

43.4
Please see response no. 7.4.

43.5
Please see response no. 7.5.

Conduct thorough studies of local crab, bottomfish, and juvenile salmon use of the Ft. Sherman area. Without these, the EIS's assessment of marine impacts is speculative.

Build a wastewater treatment plant (if tailings dam is needed) and not allow discharge of any pollutants into Lynn Canal. Technology exists to fully treat discharge.

"Backfill," or put tailings back into the mine. This would greatly reduce visual and water quality impacts and eliminate the need for a tailings dam.

Use dry tailings disposal for tailings that cannot be backfilled. This technique eliminates the need for a tailings dam, reduces surface impacts, and protects local creeks.

Develop a long-term reclamation plan for maintaining tailings dam in perpetuity.

Thank you for every consideration of all the requests above.

Sincerely yours,

Shirley Campbell

5/2/97, Adelaide, Australia
 Bureau, 24/5/97
 July 17, 1997

Simon Andrew Mitchell

I am writing to express concerns about the draft EIS on the proposed Evergreen Mine. As a former resident of nearby Evergreen, I am closely familiar with the river and the proposed AJ mine. I am immediately struck by the similarity of the tailings pond proposed at Evergreen with that proposed in the other Great Valley area. I have. Yet the ore at Evergreen is reportedly several orders of magnitude richer than that at the AJ. So it seems obvious to me that the mine owners of Kensington should be able to afford more stringent environmental mitigation efforts than that proposed for the AJ. Specifically, I think that tailings at Evergreen should be put back in the mine or backfilled in and as possible to reduce the potential for heavy metal pollution of an important fishery in Ayton Creek, not to mention the reduction of mineral impact on grazing livestock in stock farms, trout farms, and small trout. I understand that a dry tailings alignment would be appropriate for tailings that cannot be backfilled into the mine itself, and a wastewater treatment facility would become essential if a tailings pond is really needed. Any proposed discharge of toxic pollutants into Ayton Creek must be preceded by a thorough study of the point stream water quality. Likewise the EIS's treatment of effects on nearby vegetation. Furthermore, the draft EIS does not even address critical issues that the Kensington and AJ projects together will have on the community of Evergreen. Items of concern include: school, health care, drug and alcohol treatment, police services, etc.

Simon Andrew Mitchell

44.1

Please see response no. 7.4.

44.2

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

44.3

Please see response no. 5.2.

44.4

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

44.1

44.2

44.3

44.4

P.O. Box 1544
Juneau, Alaska 99801
July 17, 1991

45

U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Sirs:

This is a request to extend the comment deadline on the Forest Service's Kensington DEIS until October 1, 1991. In addition, I request that the Kensington Venture be required to do the following:

45.1

45.1 Please see response no. 1.1.

45.2

45.2 Please see response no. 5.2.

45.3

45.3 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

45.4

45.4 Please see response no. 7.4.

45.5

45.5 Please see response no. 7.5.

Conduct thorough studies of local crab, bottomfish, and juvenile salmon use of the Ft. Sherman area. Without these, the EIS's assessment of marine impacts is speculative.

Build a wastewater treatment plant (if tailings dam is needed) and not allow discharge of any pollutants into Lynn Canal. Technology exists to fully treat discharge.

"Backfill," or put tailings back into the mine. This would greatly reduce visual and water quality impacts and eliminate the need for a tailings dam.

Use dry tailings disposal for tailings that cannot be backfilled. This technique eliminates the need for a tailings dam, reduces surface impacts, and protects local creeks.

Develop a long-term reclamation plan for maintaining tailings dam in perpetuity.

Thank you for every consideration of all the requests above.

Sincerely yours,



USDA Forest Service/City & Borough of Juneau
Public Meeting on the Kensington Gold Project
Draft Environmental Impact Statement
July 18, 1991

ADDITIONAL QUESTIONS FOR
KENSINGTON DEIS INTERDISCIPLINARY TEAM

Name: Bob Anderson
Address: Box 1002
Hairston AK 99827
Telephone number: 766-2965
Preferred contact time: daytime

46.1

Please see response no. 7.4.

46.2

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

General topic:

46.1 Question(s): Why is day drainage not being used at the mine?
Is it because the amount of water for the stream is too high?
Is it because of the water?

46.2 Why are we still required to have storage treatment while the
mine will have none? Hydrology for village of 2000 is required to treat
water for 3 months. Is only 1000 the mine will produce. Efficiency is
100% for hydrology and 100% for the mine's 12 year lifespan. Maybe
short upon the due to process it too much.
Zero tolerance for pollution.

Roger Birk
Juneau Ranger District
8465 Old Dairy Road
Juneau, AK 99801
907-586-8800
Fax 586-8808

THOMAS R. QUINLAN
P. O. BOX 130
HAINEES, ALASKA 99827

July 18, 1991

47
Mr. Kenneth E. Mitchell, Dist. Ranger
Juneau Ranger District
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

I wish to support the opening of the Kensington mine for commercial mining. I have personally spent enough time reading the Draft EIS to judge that it is a very good job. I am sure that there will some areas that need to be clarified, or where further study must be made, but I personally feel that the enterprise can be carried out in an environmentally sound method.

I do feel that Haines should be added as a place where workers can live and that transportation be provided for those living here. This will help widen the economic benefit area and still not have too large an impact on the community. Furthermore, Haines over the past years has had a very fluctuating economy due in large part to the successes and failures of the local sawmill, and the number of fish that make it up Lynn Canal. This type of business provides a steady employment and smoothes the erratic swings caused by our present situation.

I might add that I have been a business man in Haines for 41 years, and feel quite competent to make this judgement.

Very truly yours,

Thomas R. Quinlan

47.1

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

47.1

Haines Chamber of Commerce

2nd & Willard Streets

P.O. Box 518 • Haines, Alaska 99827



July 22, 1991

48

JUNEAU

RANGER DISTRICT

JUL 22 1991

48.1

Kenneth E. Mitchell, District Ranger
Department of Agriculture
U. S. Forest Service
Region X, Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

DISTRICT RANGER _____
DEPUTY RANGER _____
TLM _____
REC _____
F & W _____
BM _____
VIS _____

Dear Mr. Mitchell:

The Haines Chamber of Commerce wishes to go on record as supporting the development of the Kensington Mine Project. The Haines Chamber represents 90 businesses in the area, and it is dedicated to the diversification of our economic base for the benefit of our businesses and the Haines community.

Gold mining is a traditional land use in this area. It has added color and flavor to our history as well as significant dollars to the economic growth of Alaska. It is expected that every effort will be made to develop the Kensington mine so as to protect other traditional uses in the area particularly the Haines fishery, but the project should not be treated as a total newcomer to natural resources use.

The Chamber of Commerce looks forward to a significant economic benefit to the Haines community through increased trade opportunities with Echo Bay Alaska.

Sincerely yours,

Patty A. Glackin

Patty A. Glackin
President

48.1
Thank you for your comments.

48.1

Tim McDonough Ann Myren
Box 951
Haines, AK. 99827

Ken Hitchell
District Ranger
U.S. Forest Service
8465 Old Dairy Rd
Juneau, AK. 99801

Dear Mr. Hitchell:

We are writing you to express our concerns on a number of issues dealing with the proposed Kensington mine. Before the mine is developed we would like to see the following take place

- | | | | |
|-------------|---|-------------|---|
| 49.1 | 1. Conduct thorough studies of local crab, bottom fish, and juvenile salmon use of the Ft. Sherman area. Without these, the EIS's assessment of marine impacts is speculative. | 49.1 | Please see response no. 5.2. |
| 49.2 | 2. Build a wastewater treatment plant (if a tailings dam is needed) and not allow discharge of any pollutants into Lynn Canal. Technology exists to fully treat the discharge. | 49.2 | Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS. |
| 49.3 | 3. Fully assess cumulative impacts of Kensington and A-J population increases. | 49.3 | Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS. |
| 49.4 | 4. Pay the cost of added social services including schools, alcohol and drug treatment, day care. | 49.4 | Please see response no. 5.4. |
| 49.5 | 5. "Backfill" or put tailings back into the mine. | 49.5 | Please see response no. 7.4. |
| 49.6 | 6. Use dry tailings disposal for tailings that cannot be back-filled. This technique eliminates the need for a tailings dam, reduces surface impacts, and protects local creeks. | 49.6 | Please see response no. 7.5. |
| 49.6 | 7. Develop a long-term plan for maintaining any tailings dam in perpetuity. | | |

Thank you for addressing these issues in your plans for the mine.

Sincerely,

Tim McDonough
Tim McDonough
Ann Myren

CHARLIE OTT
P.O.Box 159
SISTERS, OR.
97759

July 20, 1991

U.S. FOREST SERVICE
Ken Mitchell, Juneau Dist. Ranger
8465 Old Dairy Rd.
JUNEAU, ALASKA / 99801

Dear Mr. Mitchell;

I am writing you now in regard to the proposed Kensington gold mine along the Lynn Canal there in southeast Alaska. If any intelligence and decency were used in considering this proposal, it would NOT be permitted at all - our wildlands are getting scarcer every day and they are MUCH MORE valuable and necessary than the goddamned gold!!! But the powers that be now, cannot see beyond the dollar and I bet the damned mine will go in. Especially with the -er! administration in Alaska now. So it is up to you folks to do your job right and see to it that the asinine mine is forced to save our clean air and water as much as possible!!! They should put NO pollutants of ANY sort in our water or air - the technology is here. And if that is too much bother for them, then the asinine mine should NOT be permitted at all! GOLD IS NOT NECESSARY - CLEAN AIR AND WATER IS!!!!

The comment deadline set by you folks smells to high heaven - most people who care cannot attend hearings etc. because of vacation and work schedules!! The comment deadline SHOULD be extended at least two months

If the asinine mine has to go in you folks should see to it that the company (NOT us taxpayers!) would have to conduct a complete and thorough study of ALL marine life - bottom fish, crabs, salmon, etc. - and their use of the Pt. Sherman area. This study MUST be monitored fully and carefully!! Without a complete scientific study any EIS's assessments of marine impacts is false - only speculation!!!!

Also the company should be forced to build a wastewater treatment plant and NOT allow ANY discharge of ANY pollutants into Lynn Canal or any of the creeks and streams there!! Technology to fully treat the discharge is already available. The company should be made to develop a long term plan for maintaining any tailings dam - in perpetuity!!! They should be forced to backfill - put tailings back into the mine, and use dry tailings disposal for tailings that cannot be backfilled. There would then be no need for a tailings dam and it would reduce surface impacts and protect local streams.

I thank you for considering my letter. I lived for nearly fifty years in Alaska and am much concerned.

With all best of wishes, I remain

Sincerely,



Charlie Ott

50.1

Please see response no. 1.1.

50.2

Please see response no. 5.2.

50.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

50.4

Please see response no. 7.5.

50.5

Please see response no. 7.4.

Angie Dixon
3932 Bagley Avenue N.
Seattle, WA 98103

21 July 1991

Ken Mitchell
U.S. Forest Service
8465 Old Dairy Road
Juneau, AK 99801

Dear Mr. Mitchell:

I have lived and worked in southeast Alaska in the past. I know many areas there quite well. Lynn Canal is one. I also know mining is a dangerously destructive and polluting industry to the natural environment. If it is even allowed to take place, careful planning and precautions have to be taken, which you must already know.

Lynn Canal is a rare and beautiful ecosystem. It provides multiple resources from the ocean and land in the form of salmon, bottomfish, and other plants and animals that will be destroyed by what is currently proposed. You must know this too. One resource desired by one company for economic gain is not worth risking the rest of the environment. It is very important not to let "gold fever" take control of the situation. The bigger picture of the destructive impact that lingers long after the gold is gone is what needs to be given primary attention and prevented. All the gold in the world cannot buy what will be gone if what is proposed is allowed to take place.

My personal opinion and stand is to not allow the mine to be there at all. If money is the concern of Juneau and vicinity, there is far more money for the communities in tourism and the fisheries and preserving the natural environment for people to visit than there is in one gold mine. Don't spoil what is there and works. If the decision goes beyond this point, the mining company must be required to put the tailings back into the mine that can be put back and use "dry tailings" disposal for the tailings that cannot be "back filled". This will not pollute the area as much with toxins or scar the land as badly. If the company has the resources to dig a mine, they need to be responsible about it, including the environmental and socioeconomic impact it will have on the region. This must be made mandatory in all cases and immediately for the Kensington mine.

This is not the 1800's nor the 1950's. It is the 1990's and time that we take responsibility for our actions. Companies have to be made environmentally responsible. There are too many people producing too many toxins and less and less natural environment to absorb them.

I have read about the other options and seen drawings of the proposed pond, dam, and discharge into Lynn Canal. From my perspective, none of them are options. It is another "rape and run" situation that the state of Alaska

- 1 -

has seen before and supported too often. "Rape and run" does not work in the best interests of the communities and the people who are there after the "run" and have to pick up the pieces.

Full environmental impact studies must be made before anything transpires and if the mine is allowed to operate, any flaws in the mining operation must be remedied so that no pollutants enter Lynn Canal or the streams, the land is not scarred, and animals and vegetation minimally affected. It can be done, and the Forest Service can see that it is done. It is your job to protect the land, not sell it for short term gain despite the pressure and temptations that may be presented. This is not new information. It is a question of whether or not you will place strict environmental restrictions on industries that are highly polluting. Where does your commitment lie? Is it in support of greed or is it in support of a balanced relationship between people's needs and natural resources? Is gold more of a need or more valuable than salmon or trees? Please think very carefully and look at the past damage to the environment from human abuse to guide your decision. Are living with toxins

51.1

Please see response no. 7.4.

51.1

of cyanide, arsenic, cadmium, copper, zinc, lead, and selenium worth it? No one ever puts back wilderness except nature. It is impossible. The only wilderness left in the entire United States is in Alaska. If you are there because you like the wilderness, it needs your support. Do not allow industrial polluting to destroy it.

I appreciate your attention to this letter and strongly encourage you to work for the preservation of the natural environment in southeast Alaska and, in this case, for Lynn Canal. If you value it, you will take care of it.

Thank you,

Angie Dixon

Angie Dixon

Dear Mr. Mitchell,

23 July, 1991

I am writing to you regarding the Kensington mine, proposed for Lynn Canal. I am very concerned about the social & biological consequences of this facility, & I urge you to extend the comment deadline to at least Oct 1, 1991. As you know, many of Alaska's residents are currently busy with summer work & are not able to write or attend public hearings. My specific concerns include:

- 1) Social & economic impacts to Juneau
- 2) Inadequate marine studies, superficial EIS
- 3) Questionable integrity of the proposed tailings dam
- 4) Risk of catastrophic spill of toxic substances
- 5) Lack of wastewater treatment

I lived in Juneau for 6 years & worked all over SE Alaska as a fishery biologist technician for the Forestry Science's Lab, so I have a personal and professional interest in the area. Later, I worked

52.1 Please see response no. 1.1.

52.2 Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

52.3 Please see response no. 5.2.

52.4 Please see response no. 7.4.

52.5 Please see response no. 26.2.

52.6 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

in Montana & Nevada, studying the environmental impacts of abandoned mining sites, I feel that this background provides me with a well educated position on the proposed Kensington mine, & I urge you to take this letter seriously. There are serious flaws in the proposed facility, a more thorough EIS needs to be prepared, and hearings & comment deadlines need to be rescheduled for October.

Although my livelihood is denied from studying damaged environments, I would like nothing better than to be put out of business. Please do not provide a new study site for me on Lynn Canal by inadequately protecting the area from the potentially devastating effects of this mine.

I thank you for the opportunity to comment

Sincerely,
Kenny Gault
Tel: 867 643
Gault, C.R.E.
47443

Haines Chamber of Commerce

2nd & Willard Streets
P.O. Box 518 • Haines, Alaska 99827



July 18, 1991

Kenneth E. Mitchell
District Ranger
U. S. Dept. of Agriculture
Forest Service
Region X, Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

The Haines Chamber of Commerce would like to go on record as supporting the development of the Kensington Mine Project. It is expected that every effort will be made to develop this mine in an ecologically, economically and environmentally sound manner.

Sincerely,

Patty A. Glackin
President

53.1

Thank you for your comments.

General Delivery
Bonners Ferry, Idaho 83805
July 23, 1991

Juneau District Ranger Ken Mitchell
U.S. Forest Service
8465 Old Dairy Road
Juneau, AK 99801

Having done forest inventories along Lynn Canal, I am familiar with (and impressed with) the area, and am concerned about the many negative things I've been reading concerning the proposed Kensington mine. At the least, it looks like you should run the comment deadline into the fall. If what I read is true, there are serious ecological and social problems with the mine as planned. Apparently a more thorough biological assessment of the potentially affected area should be made and stricter standards for the mine's effluents should be set up. The mine should not be allowed to carry out the encroachment practices endorsed by the current potential guidelines.

Thank you,

Bill Whitman
Bill Whitman

54.1

Please see response no. 1.1.

55.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

55.2

Please see response no. 7.5.

55.3

Please see response no. 5.2.

Roger Birle -

I Am Asking The Forest Service
to require the mine Co's to
Build a waste water treatment
Plant - Not be allowed to
Dump any Pollutants into
Lynn Canal - and
to Plan Long Term maintenance
of any tailings dam - for ever
make extended & thorough
study of - Shellfish
Bottomfish - Salmon - juvenile
& adult returning to use the
Pt. Steman Area's -
As Gilnetter & friend of
Beautiful Lynn Canal -

Sincerely
Rich Birkle

Ken Mitchell
Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau, AK 99801

Dear Mr. Mitchell:


I write to you concerning the proposed Kensington mine, which I feel threatens our community and world. The gravity of such a nay or yea decision compels me to request you to extend the comment deadline until October 1 so that the people may express their opinions.

In addition, I think it in the best interests of our community to require the company to:

1. Conduct thorough studies of local crab, bottomfish and juvenile salmon use of the Pt. Sherman area. Without these studies, the EIS's assessment of marine impacts is speculative;
2. Build a wastewater treatment plant (if a tailings dam is needed) and not allow discharge of any pollutants into Lynn Canal. Technology exists to fully treat the discharge.
3. Fully assess cumulative impacts of Kensington and AJ population increases on Juneau.
4. Pay the cost of added social services, including schools, alcohol and drug treatment and day care.
5. "Back-fill," or put tailings back into the mine. This would greatly reduce visual and water quality impacts and eliminate the need for a tailings dam.
6. Use dry tailings disposal for tailings that cannot be back filled. This technique eliminates the need for a tailings dam, reduces surface impacts and protects local creeks.
7. Develop a long-term reclamation plan for maintaining the tailings dam in perpetuity.

Despite the above-numbered suggestions, my greatest desire remains seeing economic development plans based upon industries which are less destructive to our environment.

Very truly yours,


Eric R. Loomis

56.1

Please see response no. 1.1.

56.2

Please see response no. 5.2.

56.3

Please see response no. 4.4.

56.4

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

56.5

Please see response no. 5.4.

56.6

Please see response no. 7.4.

56.7

Please see response no. 7.5.

Ken Mitchell

Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau, AK 99801

Dear Mr. Mitchell:

I write to you concerning the proposed Kensington mine, which I feel threatens our community and world. The gravity of such a nay or yea decision compels me to request you to extend the comment deadline until October 1 so that the people may express their opinions.

In addition, I think it in the best interests of our community to require the company to:

1. Conduct thorough studies of local crab, bottomfish and juvenile salmon use of the Pt. Sherman area. Without these studies, the EIS's assessment of marine impacts is speculative;
2. Build a wastewater treatment plant (if a tailings dam is needed) and not allow discharge of any pollutants into Lynn Canal. Technology exists to fully treat the discharge.
3. Fully assess cumulative impacts of Kensington and AJ population increases on Juneau.
4. Pay the cost of added social services, including schools, alcohol and drug treatment and day care.
5. "Back-fill," or put tailings back into the mine. This would greatly reduce visual and water quality impacts and eliminate the need for a tailings dam.
6. Use dry tailings disposal for tailings that cannot be back filled. This technique eliminates the need for a tailings dam, reduces surface impacts and protects local creeks.
7. Develop a long-term reclamation plan for maintaining the tailings dam in perpetuity.

Despite the above-numbered suggestions, my greatest desire remains seeing economic development plans based upon industries which are less destructive to our environment.

Very truly yours,



Kathleen Unkel Loomis

57.1
Please see response no. 1. 1.

57.2
Please see response no. 5. 2.

57.3
Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

57.4
Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

57.5
Please see response no. 5. 4.

57.6
Please see response no. 7. 4.

57.7
Please see response no. 7. 5.

July 26, 1991


Dear Sirs,

The Kensington Mine Project has the potential to impact the economic welfare of residents whose incomes depend on the marine resources of Lynn Canal. This concern is evidenced by the enclosed petition containing 135 signatures. This petition contains the signatures of 43 drift gillnet fishermen who depend upon these waters for their livelihood.

The petition clearly indicates that the proposed mixing zone for mine effluent is totally unacceptable. The signators feel strongly that no pollutants be discharged into our waters. Any proposals for marine discharge must be supported by thorough studies of marine resources prior to the design stage. The current mixing zone proposal lacks any credibility due to a failure to build upon a thorough understanding of the physical and biologic processes in this area. Assurances based on generalities and lacking in site specific data will be met with strong resistance.

We would appreciate your support for our concerns. The apparent "fast tracking" of the Kensington permit process needs to be adjusted to allow the thorough review necessary for a project of this magnitude.

Sincerely yours,


 Craig A. McCormick


 Norman Blank

58.1 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

58.2 Please see response no. 5.2.

P.O. Box 8060
Fort Alexander, AK 99836
27 July 91

Ken Mitchell
Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau, AK 99801

Dear Mr Mitchell:

A short note to express my opposition to the Kensington Mine as currently planned. I have no opposition to actual mining itself, but in the 1990s I believe that any development should be done right, with the proper environmental ethics and with no shortcuts taken. Thus, I strongly support a wastewater treatment plant for the mine tailing effluents, and complete protection of the important Lynn Canal fisheries. I would also like to see the mine developed with the least possible visual detracton; I believe putting the tailings back into the mine would greatly reduce visual and water quality impacts and eliminate the need for a tailings dam.

Thank you for this opportunity to comment.

Sincerely,


Mark J. Kirchhoff

60.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

60.2

Please see response no. 7.4.

60.1

60.2

Peter Goll
Management and Government Services
P.O. Box 850
Haines, Alaska 99827

July 27, 1991

Juneau District Ranger Ken Mitchell
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

Re: Kensington Mine EIS

From January, 1983, until January, 1991, I served in the Alaska Legislature representing Election District 2 which includes most of the rural communities in Southeast Alaska, from Metlakatla to Yakutat.

During this period, I received extensive public comment on various coastal mining operations and on the Kensington Mine in particular.

Area comment was consistent in its concern that mining not be allowed to have any negative impact on water quality.

Based upon extensive input to my office over many years, neither the general public nor advocates for a variety of economic interests are satisfied with the level of protection given to water quality by state and federal regulators. The public understands that protection has costs and wants those costs expended by industry and regulators.

The benefits of water quality protection to our region outweigh the benefits which can be demonstrated for the Kensington Mine.

I urge you to not permit any discharge of any waste into the Lynn Canal. Should any water be discharged into the Canal, it must be completely treated. Any other action would be contrary to the public interest and its stated will.

Thank you.

Sincerely,


Peter Goll

61.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

July 28, 1991

Director, Water Division
U.S. Environmental Protection Administration
1200 6th Avenue, WD-134
Seattle, Washington 98101

Dear Sir:

I am requesting that you extend the public comment deadline on the Kensington Mine, Lynn Canal, Alaska until October 1, 1991.

The FIS for the Kensington Mine should include a thorough study of all local crab, bottomfish, and juvenile salmon use of the Point Sherman area.

Kensington should be required to build a wastewater treatment plant if a tailings dam is needed, and not be allowed to discharge any pollutants into Lynn Canal. They should consider putting tailings back into the mine, and to use dry tailings disposal for tailings that can not be back-filled. They should be required to develop a long-term plan for maintaining any tailings dam that may be built.

Sincerely,

John House
E.D. House

Executive
Gustavus, AK 99701

cc Ken Mitchell
cc John Halterman

62.1

Please see response no. 1.1.

62.2

Please see response no. 5.2.

62.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

62.4

Please see response no. 7.4.

62.5

Please see response no. 7.5.

28 JULY '91

DEAR KEN MITCHELL -

IT HAS COME TO MY ATTENTION THAT, ONCE AGAIN, THE FOREST SERVICE MAY BE NEGLECTING THEIR DUTIES IN PROTECTING THE INTEGRITY OF THE TONGASS. I'VE REFERRING TO THE PROPOSED KENSINGTON MINE IN LYNN CANAL. MY FIRST THOUGHT WAS THAT THE HEARINGS ON THE DRAFT EIS WERE HELD IN JULY & WRITTEN COMMENTS WERE DUE AUG 1. KEN, YOU'VE LIVED HERE OVER 30 YEARS & ARE AWARE MANY PEOPLE ARE OUT WORKING DURING THIS TIME & WILL NOT BE ABLE TO COMMENT. THIS HARDLY SEEMS FAIR. IT IS COMPLETELY UNNECESSARY TO HASTILY RUSH OUT & ALLOW PROJECTS TO BE BUILT WITHOUT FULLY ADDRESSING ALL ISSUES. THE TECHNOLOGY EXISTS TODAY FOR BUILDING PROJECTS OF THIS SIZE IN AN ENVIRONMENTALLY SENSITIVE MANNER. WE MUST DEMAND THEY DO SO! IF THEY'RE NOT WILLING TO COMPLY, PLEASE SUGGEST THEY GO ELSEWHERE.

WITH THE PASSAGE LAST FALL OF THE
TOMBASS TIMBER REFORM, IT IS CLEAR THAT MUST
SOUTHEASTERN'S WALL OF AMERICA, APPRECIATE &
VALUE THE TOMBASS FOR WHAT IT IS: ONE OF THE LAST
CLEAN, PURE STANDS OF WILDERNESS LEFT IN THIS COUNTRY.
IT IS THE PRISTINE BEAUTY OF THE TOMBASS THAT WE MUST
PROTECT, FIRST & FOREMOST. HERE'S A FEW THINGS WE
CAN DO.

- 63.1 1. EXTEND THE COMMENT DEADLINE FROM 11/11 AT LEAST
CUT 1.
- 63.2 2. CONDUCT THOROUGH STUDIES OF LOCAL CLIMATE, RECREATION &
SALMON SMOLTS IN PT. SHERMAN AREA.
- 63.3 3. PUT TAILINGS BACK INTO THE MINE, ELIMINATING THE NEED
FOR A TAILINGS DAM. IF THE MINE COMPANY INSISTS ON A
DAM, WHICH I DON'T BELIEVE IS NECESSARY, THEY MUST BUILD
A WASTEWATER TREATMENT PLANT. ALL POLLUTANTS SHOULD
ENTER LYNN CANAL.
- 63.4 4. FULLY ASSESS THE IMPACT OF POLLUTION INCREASES DUE TO THE
BUILDING OF THE KENSINGTON A-T MINE & HAVE THE
COMPANIES PAY THE COST OF THE ADDED SOCIAL SERVICES.
- 63.5 5. USE DRY TAILING DISPOSAL FOR TAILINGS THAT CAN'T BE
RECYCLED, ALSO ELIMINATING THE NEED FOR A TAILINGS DAM.
- 63.6 6. DEVELOP A LONG-TERM PLAN FOR MAINTAINING A TAILINGS DAM

I HAVE GULCHIFIED IN LYNN CANAL & CAN ASSURE
YOU THAT THE PT SHERMAN AREA IS, & ALWAYS HAS BEEN, ONE
OF THE MOST PRODUCTIVE DRIFTS IN THE ENTIRE AREA. THIS
"INDUSTRY" HAS EXISTED FOR YEARS & WILL CONTINUE TO DO SO.
A CLAIM THE KENSINGTON MINE WILL NEVER BE ABLE TO MAKE.
NOW, I REALIZE YOU LOVE SOUTHEAST AS MUCH AS I DO. IF I
CAN ASK ANYTHING, PLEASE, JUST FOLLOW YOUR HEART.

THANKS -
PAUL BAEUER
CC: JUNEAU PLANNING COMMISSION
US EPA
SEALC
A 20 YR SOUTHEASTERN

63.1

Please see response no. 1.1.

63.2

Please see response no. 5.2.

63.3

Please see response no. 7.4.

63.4

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

63.5

Please see responses no. 5.3 and 5.4.

63.6

Please see response no. 7.5.

Juneau District Ranger Ken Mitchell
 U.S. Forest Service
 8465 Old dairy road
 Juneau, Alaska 99801

Dear Mr. Mitchell:

Hello, my letter is in response to the draft environmental impact statement on the proposed Kensington gold mine located on the east side of Lynn Canal. I'll be direct and say I'm very much opposed to this project and I'm also upset with the Forest Service's industry oriented bias in dealing with this project. It seems the concerned citizen/resident has to rely on himself to make sure environmental concerns are met rather than trusting the Forest Service to do so.

I would like to point out concerns raised by the Southeast Alaska Conservation Council:

1. Extend comment deadline until October 1st.
2. Conduct thorough studies of local crab, bottomfish, and juvenile salmon out of the Ft. Sullivan area.
3. Build a wastewater treatment plant (if a tailings dam is needed) and not allow discharge of any pollutants

64.1

Please see response no. 1.1.

64.2

Please see response no. 5.2.

64.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

- into Lyna Canal.
4. Fully assess cumulative impacts of Kensington and A-J population increases.
 5. Pay the cost of added social services, such as schools etc.
 6. "Backfill", or put tailings back into the mine.
 7. Use dry tailings disposal for tailings that cannot be back-filled.
 8. Develop a long-term plan for maintaining any tailings dam in perpetuity.

I'm surprised that in these times of heightened environmental awareness that all these environmental concerns are being glossed over in favor of short term profits. Hey, wake up!

My thanks for your time,

[Signature]

64.4

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

64.5

Please see response no. 5.4.

64.6

Please see response no. 7.4.

64.7

Please see response no. 7.5.

Sherrie Markin Goll
Legislative Services
P.O. Box 850
Haines, Alaska, 99827

65 July 29, 1991

Mr. Ken Mitchell
Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

Regarding the environmental impact statement for the Kensington mine:

65.1 { It is essential that any wastewater put in the Lynn Canal be fully treated.

Any impartial study of the region's long term economics make it clear that protection of water quality should be the highest priority.

This is vital for the fishery, visitor industries, marine mammals, migratory birds, future development, and is the stated will of the area's citizens.

The technology exists to develop the mine with no negative impact on the water. I expect you to insist that it be used. Thank you.

Sincerely,



Sherrie Markin Goll

65.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

University of Alaska
211 Irving
Fairbanks, AK 99775-0180

Ken Mitchell
U.S. Forest Service
8465 Old Battery Rd.
Juneau, Alaska 99801

Mr. Mitchell,

I would like to encourage your agency to consider either of the following options for the Kensington gold mine proposal:

- 66.1 "abort the project because of its potential negative impacts on water quality and fish and wildlife habitat in Lynn Canal, or
- 66.2 "assure that the Forest Service, EPA and other relevant agencies oversee Kensington Venture's projects to mitigate those negative effects. Kensington's efforts to protect the environment around its mine site should include backfilling the mines with tailings, establishing a dry tailings disposal method rather than a tailings pond, or constructing a wastewater treatment plant on site to prevent any pollutants produced by mining activities from contaminating Lynn Canal.

I strongly prefer to see plans for proposed mine dropped. If, however, the project is to be built, I hope that we can do it in a manner that protects the environment in Lynn Canal and respects the astounding beauty of this part of Alaska. Thank you for hearing me on this issue.

Sincerely,

Steve Lewis

Stephen W. Lewis

66.1

Please see the discussion of aquatic impacts in Chapter 4 of the EIS.

66.2

Please see the mitigation and reclamation plan sections of Appendix A, Applicant Proposal (DEIS) and the Management, Mitigation and Monitoring section of Chapter 2 (FEIS).

66.3

Please see response no. 7.4.

66.4

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

Mr. Ken Mitchell
Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

I am writing concerning the Draft Environmental Impact Statement for the Kensington Gold Mine Project. I believe the DEIS findings are seriously flawed and without basis and the project should be thoroughly reviewed by your agency. Due to the overwhelming amount of information presented in the DEIS, please extend the present comment period at least two months to enable the comment process to work effectively for all concerned.

I am opposed to many aspects of the mine as described in the preferred alternative. Backfilling of the tailings into the mine would lessen the visual and water quality impacts of the mine and eliminate the need for a tailings dam that must be maintained forever. The use of dry tailings disposal should also be considered if the tailings cannot be backfilled. This technique eliminates the need for a tailings dam, reduces surface impacts, and protects local creeks. If the tailings dam is needed, then the building of a wastewater treatment plant would eliminate the discharge of any pollutants into Lynn Canal. This technology exists and should be utilized by the applicant to lessen the impact of the mine on the surrounding environment. In addition, the preferred alternative should require a much stronger and stable dam design than the proposed dam. The DEIS should also develop a long term maintenance plan for maintaining the dam in perpetuity.

The DEIS is speculative on the effects the proposed outfall will have on the Lynn Canal environment. Your agency should conduct thorough studies of local crab, bottomfish, and juvenile salmon populations in the Pt. Sherman area and incorporate the findings of these studies into the final determinations of the EIS.

The mine will have a serious effect on the community of Juneau. With the proposed opening of the A-J mine, these two projects will seriously effect my quality of life. I request that the DEIS fully assess the cumulative impacts of the Kensington and A-J mines in terms of population increases and environmental stress. The added costs of social services including schools, day care, and alcohol and drug treatment, should be studied and reported in the DEIS. The cost of rents has already risen in Juneau due to the Greens Creek Mine and the added burden of these population increases will be devastating to the price of affordable housing.

In conclusion, I feel that the Kensington mine project as proposed is not an environmentally sound project. Many alternatives exist to lessen the impact this mine will have on the surrounding environment. The Forest service should require the applicant to explore all alternatives that exist and develop a preferred alternative that allows the minimum amount of impact to the Lynn Canal area.

Sincerely,

Jim Rehfeldt
PO Box 20477
Juneau, Alaska 99802

67.1 Please see response no. 1.1.

67.2 Please see response no. 7.4.

67.3 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

67.4 Please see response no. 7.5.

67.5 Please see response no. 5.2.

67.6 Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

67.7 The Forest Service as lead agency and EPA and the U.S. Army Corps of Engineers as cooperating agencies are responsible for developing alternatives that address the issues identified during scoping. Alternatives have been displayed so the public and decision makers may compare their merits.

68.1

Please refer to Chapter 4 of the FEIS for discussions of consequences of failure of major project components.

68.2

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

68.3

A discussion of global socioeconomics and environmental effects is beyond the scope of the EIS. Such a study would encompass such large issues that there would be no way to establish valid scientific consensus on which to base an analysis. Even if such a study could be properly grounded, the effects of such a small project (globally speaking) would be lost in the statistical inaccuracy of the data collection and analysis.

68.4

The DEIS, in Chapter 2, considers the development of hydroelectric power in the drainages near the project. It concludes that there is insufficient flow to provide power to the project. Analysis of the fuel needs of northern southeast Alaska for the next 50 years is unrelated to the purpose of the EIS.

68.5

Please see response no. 68.3.

68.6

LPG used at the project will be produced in the commercial fossil fuel production and supply network. No new production facilities are planned for this project. Please see the description of project supply transportation found on page 2-13 of the DEIS.

68.7

The DEIS eliminated detailed discussion of hydroelectric power because an adequate supply is not available near the mine site. Developing a hydropower source remote from the mine site would require the installation of a massive transmission system. Significant environmental effects would be expected from such a power exploitation and transportation system and would extend project impacts far beyond the boundaries of the proposed project.

Expectations are that Kensington and AJ will operate concurrently. This renders moot any discussion of using abandoned AJ facilities to supply the Kensington project.

Trade-offs between fossil fuels and renewable resources are market driven. Current market conditions are such that alternate energy sources would be prohibitively expensive.

Box 020993,
Juneau, Alaska 99802
July 30, 1991

Re: Kensington DEIS comments

Dear Mr. Mitchell:

(We have four principal areas of comment:

First: The DEIS needs to include a failure mode analysis, cataloging the Project's systems' failure modes, the probability and consequences of each, and the resulting cumulative effects.

Second: Timing and sequencing of Kensington with AJ, and other major mining projects, should be considered. AJ and Kensington probably should not be permitted for simultaneous construction and operation.

Third: "Socioeconomics" must at least mention the global effect of permitting the scarce resource of capital to be committed to a project producing gold, a product likely to be in surplus in the world for a very long time.

Fourth: The DEIS is too provincial, considering only short-term local effects. The Project has long-term, global, environmental and economic effects which must be listed and analyzed, as follows:

A. A DEIS section devoted to energy is warranted, to include: electrical energy generation, transportation, total fossil fuel, and analysis of renewable energy options, for the mining industry, for Northern Southeast Alaska, for the next fifty years.

B. The gross, aggregate, global effects of electric energy production must be estimated, included in the DEIS, and considered in permitting. The "Global Warning" phenomenon and the dangers of the global fossil-fuel supply system require that: 1. CO2 be included in Tables 4-1 through 4-6

The LPG production and transportation system must be described; LPG source, transportation vehicle(s) type and energy consumption, sea route, trip frequency and detailed offloading technique compatible with winter sea conditions in Lynn Canal. "Power Supply", Page 2-16 and 2-30 is totally deficient.

Any fossil fuel used by the Project, especially relatively clean-burning LPG, is no longer available to power less-polluting public and private transportation, as increasingly required by environmental laws.

C. The hydroelectric "power supply" option is "eliminated from detailed consideration" on Page S-3, without justification. "Hydropower" on Page 2-30 is inadequate. The search for hydropower sources should be expanded beyond local drainages until adequate hydropower is found. This may include importing hydropower-derived hydrogen fuel from Dorothy Lake.

If AJ is required to build the Dorothy Lake hydroelectric project for its energy source, that energy increment - upon AJ closure - could be shipped, as liquefied hydrogen, to power Kensington and other mines. Please refer to proceedings of June 25, 1991 Anchorage Conference "Hydrogen Potential for Alaska: Industrial and Commercial Applications", sponsored by Alaska Natural Energy Institute, Alaska Department of Commerce and Economic Development, et al.

At what social and environmental cost of fossil fuel does renewable (hydropower or other) energy become competitive? Catalog the potential hydroelectric sites for powering the projects; include type, capacity, and capital cost of each.

D. Transportation energy analysis must give fossil fuel consumption for helicopter vs. surface sea personnel transportation, and for LPG transportation. Include all modes of personnel transport: private auto, bus, surface sea, air. Page 2-28,29 analysis is inadequate. Private auto transportation should be minimized by any Project permitting. Employees driving private vehicles to Echo Cove would be a terrible waste. Ferry from Auke Bay is probably best compromise: arrange to share Greens Creek Terminal.

E. Solid waste disposal, Page 2-17 is inadequate. It assumes shipping all "non-combustible" solid waste to Juneau for disposal. Juneau already has a solid-waste-disposal problem, and should not receive Project wastes.

F. The "... significant environmental advantage(s) to offsite processing", page 2-21, is potential availability of hydroelectric energy, from Snettisham and/or Dorothy Lake. However, disadvantages - energy and other - of offsite processing are severe.

G. Transportation analysis, Page 2-28,29 concludes that a fill breakwater on Lynn Canal is required for reliable, safe, energy-efficient transportation of material, fuel, and personnel to/from the Project. But a breakwater is economically and environmentally unacceptable. This is a fatal flaw in the Project.

H. Page 2-43 "Air quality mitigation measures" should include 90 per cent non-fossil-fuel energy generation to nearly eliminate CO2 and other emissions.

CONCLUSION: Global energy and environmental problems will probably, by one mechanism or another, restrict USA access to fossil fuels. Consequent USA energy policy will then restrict fossil fuel access for low-priority uses, such as gold mining. The public and the permitting agencies should anticipate that, and prevent the commitment of scarce capital to, and the dissipation of fossil fuel energy upon, the Kensington Project.

The long-term severity of fossil fuel supply and global warming dangers suggest Alternative A - NO ACTION.

Or a new Alternative, F, should be developed, combining the best of Alternatives B,C,D,E with a long-term, regional, mining industry, renewable-source only (non-fossil, non-nuclear) electrical energy supply, permitting diesel fuel for mobile excavation equipment only.

Thank you for your consideration

Sincerely,

William C. Leighty
William C. Leighty
Principals, Alaska Applied Sciences, Inc.

Nancy J. Waterman
Nancy J. Waterman

68.8

Fossil fuel consumption was not identified as an issue during scoping.

68.9

The DEIS at page 4-68 identifies landfill capacity in Juneau as one of the public services currently nearing exhaustion of its usable life. This is happening now and will not change with or without approval of the Kensington project. Wastes generated directly or indirectly by the project will merely bring exhaustion of the current site about sooner than would otherwise occur. The DEIS serves to notify local officials responsible for waste disposal of this effect.

68.10

Thank you for your comment.

68.11

The DEIS discussion on pages 2-28 and 2-29 refers to a transportation alternative that was eliminated from detailed consideration in the EIS. There is no breakwater proposed for any of the action alternatives.

68.12

Please see responses no. 68.3, 68.4 and 68.7. Also, please note that carbon dioxide emissions are not regulated under the Clean Air Act.

715 Muir Avenue
Kenai, Alaska 99611
July 30, 1991

U.S. FOREST SERVICE
Attention: Mr. Ken Mitchell, District Ranger
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

I am writing to you concerning the proposed Kensington mine project, in the Chugach National Forest adjacent to Lynn Canal.

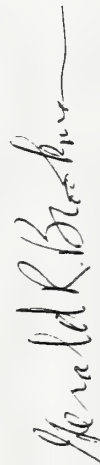
I would like to urge that the permit for this mine, if any is issued, include a requirement that a wastewater treatment plant be built, if a tailings dam is needed, and that it be adequate to remove all pollutants, so that any water discharged into Lynn Canal be at least as clean as the natural water flowing into this body of water in the area where the mine would be located. Backfilling of tailings should be required, also.

I would like to urge, in addition, that dry tailings disposal for tailings that cannot be back-filled be required in any permit issued. If a tailings dam is required, a long-term plan for maintaining any such dam in perpetuity should be required, together with provision for financing of this process.

I would like to request, in addition, that the Environmental Impact Study be amended, if necessary, to fully include the effects of this project on the wildlife resources in this area, including a thorough study of local crab, bottomfish, and juvenile salmon use of the Point Sherman area, with a full baseline survey and assessment being done by a qualified research agency.

In addition, the Final E.I.S. should fully address the cumulative impacts of the Kensington and Alaska-Juneau mine population impacts on Juneau and the surrounding area. This should include, but not be limited to, the costs of needed social services, such as schools, alcohol and drug impact, day care, increased law enforcement, etc.

Sincerely,



Gerald R. Brookman

69.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

69.2

Please see response no. 7.4.

69.3

Please see response no. 7.5.

69.4

Please see response no. 5.2.

69.5

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

69.1

69.2

69.3

69.4

69.5

Tongass Tourism & Recreation Business Association

740 Fifth St. • Juneau, Alaska 99801
(907) 586-4275

July 30, 1991

Ken Mitchell, Juneau District Ranger
Chatham Area, Tongass National Forest
8165 Old Dairy Road
Juneau, AK 99801

Re: Kensington Gold Project Draft EIS

Dear Ken:

The Tongass Tourism and Recreation Business Association is composed of more than 100 tourism or recreation-related businesses affected by management of the Tongass National Forest. We are not opposed to mining, as long as it does not hurt other industries such as tourism and fishing. We're particularly concerned about the impacts this project could have on tourism-related businesses in Lynn Canal. Some of the problems we see are as follows:

1) Helicopter traffic noise; not only along the recreational waters of Berners Bay but along many road system beaches and/or uplands of the Glacier Highway. The proposed route (Montana Creek to Windfall Lake across Herbert & Eagle Rivers and over Cowee Creek/Echo Cove area) crosses many quiet and peaceful recreational trails & beaches. Helicopter traffic noise associated with the exploration phase of the Al Mine in Gold Creek Valley has been deafening at times.

The Kensington Project should give greater consideration to daily water transport of personnel, particularly in light of a connecting tunnel between the Johnson Creek drainage and the Juatin property. When rough water conditions prevent a landing at Comet Beach, the daily ferry could divert to the existing landing site and road connection to the Juatin Mine, and then use the connecting tunnel. This should alleviate the necessity of the 8.5 mile Slate Creek Road and the extra expense and noise of a 20 passenger helicopter.

If helicopter access was still deemed the preferred transport method, the flight path should be changed to cross Auke Bay and follow Lynn Canal to minimize noise impacts to wildlife and upland recreation users.

2) The visual impacts of a one half mile wide earthen dam would be considerable along an otherwise untouched and spectacular shoreline and mountain range. The many cruise ships, tour boats, recreational vessels, and flightseeing aircraft passing by would be negatively affected by such an ominous structure. After all, 100 ft areas such as this are supposed to be managed for the wildland character, not mine-land character.

Using backfill techniques and dry tailings disposal (for those that cannot be backfilled) eliminates the need for a tailings dam, would greatly reduce visual as well as

70.1

Chapter 2 contains a discussion of the proposal to build a connecting tunnel between the Johnson Creek and Sherman Creek drainages and reasons for not considering this option in detail.

70.2

Please see the revised discussion of helicopter flight paths in the noise section of Chapter 4 in the FEIS.

70.3

Please see response no. 7.4.

70.3 [water quality impacts and would preserve more of Ophir and Sherman Creeks.

70.4 [3) Associated impacts of an earthen dam such as the loss of wildlife habitat and potential impact to fisheries resources in the event of any dam failure or spill need further review and/or mitigation measures.

70.5 [Any tailings dam should have a wastewater treatment plant to prevent the discharge of any pollutants into Lynn Canal. A long term plan should be required for maintaining any tailings dam.

70.6 [4) And finally, the "mixing zone" for the mine effluent overlays a major fisheries corridor for salmon in upper Lynn Canal. These fisheries support substantial commercial and sport fishing operations and stand to be severely impacted in the event of any spills, dam failures or other accidents. The technology exists to fully treat all mine discharges and thereby avoid the "mixing zone" altogether and should be employed.

70.7 [In all fairness to the Lynn Canal fishing community as well as the local tourism industry, the comment period should be extended until October 1st.

Thanks for the opportunity to comment.

Sincerely,

Jeffrey Sloss

Jeffrey Sloss
Executive Director

70.4

The DEIS contains detailed analysis of the effects of the proposed tailings disposal method. A worst case analysis of dam failure can be found on DEIS pages 4-8, 4-35, 4-38 and 4-39. Please note that this event has a very low probability of occurrence because of design and monitoring requirements that will be part of the project. The analysis is displayed in the DEIS to insure full disclosure of all possible risks.

70.5

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

70.6

Please see response no. 7.5.

70.7

Please see response no. 1.1.

Dear Mr. Mitchell:

It has come to our attention that we have been inappropriately cited in the Forest Service's Draft Environmental Impact Statement for the Kensington Gold Project. Specifically, on page 4-67, we have been cited as the source of the following:

"The demand for chemical dependency treatment services may be higher for the mine-related population than for the current population. Males 20-40 years of age would make up much of the mine workforce and are disproportionately represented in local treatment programs (McDowell, 1990c)."

We did not say this in the report cited (our AJ Impacts study) or in our study, *The Socioeconomic Impacts of Development and Operation of the Kensington Mine*. We stated in both reports:

"It is possible that the demand for chemical dependency treatment services by the mine-related population will be proportionally slightly higher than by the current population. The demand for chemical dependency treatment services will depend on the extent to which the mine-related population is disproportionately represented by young males. Men 20 to 40 years of age are disproportionately represented in local treatment programs. If there is not a disproportionate number of young males in the mine-related population, then the Kensington population will demand services at the same rate as Juneau's current population."

Our analysis of the potential impact of the Kensington project on local chemical dependency services is summarized on pages 35 and 36, which read:

"The permanent mining population will only require treatment at an above average rate if the mine is disproportionately composed of young males. If the age and sex ratios of the mining population are the same as current Juneau ratios, then there will be no disproportionate increase in the demand for chemical dependency services. The support sector population will presumably require treatment at about the average rate in the Juneau population."

We have no data indicating that young males will make up a disproportionate share of the Echo Bay's workforce.

We stand by our analysis of the potential impacts on Juneau's chemical dependency services. If our work is to be cited in the DEIS, it should be cited accurately and without misrepresentation.

Thank you for your consideration.

Sincerely,


James S. Calvin
Project Manager

71.1

Thank you for the clarifying information. The FEIS has been revised to more accurately reflect your findings.

University of Alaska
211 Irving
Fairbanks, AK 99775-0180

Ken Mitchell
U.S. Forest Service
8465 Old Dairy Rd.
Juneau, AK 99801

Ranger Mitchell.

In thinking about and planning for the proposed Kensington gold mine, please consider either:

"aborting the project because of its potential negative impacts on water quality and fish and wildlife habitat in Lynn Canal, or

"assuring that the Forest Service oversees Kensington Venture's projects to mitigate those negative effects. Kensington's efforts to protect the environment around its mine site should include backfilling the mines with tailings, establishing a dry tailings disposal method rather than a tailings pond, or constructing a wastewater treatment plant on site to prevent any pollutants produced by mining activities from contaminating Lynn Canal.

While I would prefer to see plans for the mine abandoned altogether in favor of maintaining the current beauty and integrity of this part of the coast, I recognize that this mine will probably become a reality. As such, it represents an opportunity for us to work on a safe, sustainable development/wilderness balance here in Alaska. I encourage you to rise to the challenge.

Sincerely,



Karen Max

72.1 Please see the discussion of aquatic impacts in Chapter 4 of the EIS.

72.2 Please see the mitigation and reclamation plan sections of Appendix A, Applicant Proposal (DEIS) and the Management, Mitigation and Monitoring section of Chapter 2 (FEIS).

72.3 Please see response no. 7.4.

72.4 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

Box 020923
Juneau AK 99802
July 31, 1991

Dear Mr. Mitchell,

Please give extra attention to those areas of the Kensington proposed project which are old-growth forest. As the DEIS states, this forest is impossible to replace. It therefore requires that the Alternative A - no action option be given more value.

Sincerely,

Nancy L. Natorman
907-586-3278

73.1

73.1
The EIS has considered effects on old growth forest in the analysis presented in Chapter 4.

PO Box 7 King Salmon, AK 99613
 Mt. Mageik
 Katmai National Park and Preserve, Alaska
 Photograph by Ray Kenny

Mt. Mageik is one of six active volcanoes in the Valley of Ten Thousand Smokes. Rising 7250 feet above sea level, Mt. Mageik has erupted 4 times in the 20th Century.

Hello Ken!

I THOUGHT THIS CARD APPROPRIATE, NOT FOR ITS BEAUTY, BUT AS A REMINDER HOW FRAGILE AND IMPORTANT THE EARTH IS, AND HOW WE, THROUGH OUR CONCERN AND OUR SCIENCE, HAVE DECIDED TO PROTECT, AND MORE IMPORTANTLY, HAVE LEARNED AND ACCEPTED ITS VITALNESS. THE EARTH'S, THAT IS.

WITH THIS SAID I FEEL IT IS IMPORTANT THAT THE PROCESS, ESPECIALLY PUBLIC REVIEW, BE GIVEN AMPLE TIME FOR THE GREATEST NUMBER OF INPUTS TO OCCUR. LET'S NOT FORGET THAT IN A DEMOCRACY THE GREATER NUMBER OF VOICES HEARD MAKES THE PROCESS FAIRER. SO PLEASE EXTEND THE COMMENT DEADLINE TO AT LEAST OCTOBER 1. FOR THE KENSINGTON MINE DEIS. FURTHERMORE, IT'S VITALLY IMPORTANT THAT THE MINING COMPANY UNDERSTAND SHORT CUTS WON'T HELP THEM, AND SAYING YOUR "ENVIRONMENTALLY SOUND" DOESN'T CONCLUDE

Produced by Beautyway, Box 340, Flagstaff, AZ 86002
 Co-operative Publisher with Museums, Parks, and Travel Organizations. #112



THAT YOU ARE.
 IN OTHER WORDS, "ENVIRONMENTALLY SOUND" IS A RUBBER STAMP. REAL WORK IS INVOLVED. REAL WORK AND IMAGINATION AND INNOVATION. THAT'S THE AMERICAN KNOW-HOW. IT'S A TRADITION AND WE MUST BRING IT WITH US AS WE TRY TO MINIMIZE OUR IMPACT ON SUCH A GREAT PLANET.
 Thank you
 Michael Clark

Juneau Dist. Ranger Ken Mitchell
 US FS
 8465 Old Dairy Rd
 Juneau AK 99801

J75

74.1

Please see response no. 1.1.

Juneau District Ranger Ken Mitchell
U.S. Forest Service
8465 Old Dairy Rd.
Juneau AK 99801

Re: Kensington mine

Dear Ken,

As an organization representing hunters, guides and wildlife users throughout the state, Alaska Reform is very concerned about the development of this area. There are some serious problems with the mine as it is proposed in the current draft EIS. Before we address some of these, we would request an extension of the public comment deadline by at least two months in order to give those affected more time to respond.

As hunters, biologists and guides, we would like to see strong measures taken to reduce personnel impact on local wildlife. For example, workers should not be allowed to use firearms within at least several miles of the mine. Ideally, firearms should be prohibited to workers during their employment. Workers should be encouraged to and given incentives for keeping an eye on their co-workers unethical activities. Signs should be posted around the dump and cafeteria reminding workers that it is illegal to hunt grizzly bears within 1/2 mile of a dump.

If open pit dumps are used, they will be a significant source for unnecessary bear mortality, as bears will be shot in self defense and opportunistically by employees. Waste reduction, recycling and heavy duty bear fencing should be used in waste management. Avoidance of local wildlife use areas, such as bear denning and feeding should be a major factor in locating dump and other high use areas.

In order to accurately assess marine impacts, more research needs to be done on crab, bottomfish and salmon use of the area.

To protect local creeks and reduce surface impacts, the mine should use dry tailings disposal for those that can't be backfilled. Backfilling whenever possible would greatly reduce visual and water quality impact.

If a tailings dam is needed, a wastewater treatment plant should be built using the best technology. There is no reason for any amount of pollution to Lynn Canal. In addition, a long term plan should be developed for maintaining any tailings dam.

We are opposed to this mine, but if it is built, environmental impacts should be reduced as much as is possible. We are also concerned about population increases and added social costs to the Juneau area.

We would like a response to these issues.

Heidi Robichaud
Secretary

75.1

Please see response no. 1.1.

75.2

The Applicant Proposal (DEIS, Appendix A) contains proposals to prevent employee interaction with animals on site, including a prohibition on hunting on developed project properties and private lands. Please refer to this section.

75.3

Open pit dumps are not proposed for use on the project.

75.4

Please see response no. 5.2.

75.5

Please see response no. 7.4.

75.6

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

75.7

Please see response no. 7.5.

75.8

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

P.O. Box 206
Haines, Alaska 99827

August 1, 1991

Mr. Ken Mitchell
Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

Regarding the environmental impact statement for the Kensington mine:

It is essential that any wastewater put in the Lynn Canal be fully treated.

Any impartial study of the region's long term economics make it clear that protection of water quality should be the highest priority.

This is vital for the fishery, visitor industries, marine mammals, migratory birds, future development, and is the stated will of the area's citizens.

The technology exists to develop the mine with no negative impact on the water. I expect you to insist that it be used. Thank you.

Sincerely,



Rebecca Redwine Monroe

76.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

76.1

Aug. 2, 1991

U.S. Forest Service
8465 Old King Rd.
Juneau, 99801

Dear Sir,

My comments on the Forest Service's proposal for the Kensington gold mine are as follows:

77.1

①

No "mixing zone" in Lynn Canal

77.2

②

More thorough biological studies of Lynn Canal

77.3

③

Use dry tailings disposal & "backfill" tailings into mine

77.4

④

A "mixing zone" is not legal near Pt. Steman --

Sincerely,

Lisa C. Stoughton
114 West 6th St.
Juneau, Alaska
99801

77.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

77.2

Please see response no. 5.2.

77.3

Please see response no. 7.4.

77.4

Alaska Department of Environmental Conservation is the agency charged with determining whether the National Pollutant Discharge Elimination System permit proposed for issuance by EPA meets state receiving water quality standards.

US Forest Service
8465 Old Dairy Road
Juneau, AK 99802

Dear Sir/Madam:

I am writing to express my concern over the proposed mixing zone for the Kensington gold mine. I have been a resident of Southeast Alaska since the mid-70s.

The placement of high levels of heavy metals and cyanide into the marine environment is not a feasible or appropriate option. The Forest Service's assessment makes it clear that the levels of cyanide in the mixing zone would exceed federal water quality standards for cyanide, copper, lead and mercury. Cyanide and heavy metals should not be placed into the marine environment and the food chain when there are other options that can be utilized. These options may cost the mining company more money, but it is a price that should be incorporated during the initial planning phases of a project. All water dumped into Lynn Canal should be treated to state and federal water quality standards.

78.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

Sincerely,



Linda Van Houlen

U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

To all those concerned:

Once again as a born and raised Alaskan I am writing about the management practices of the U.S. Forest Service. The Fisheries of Alaska is our 1st and primary economic base. Fisheries are constantly being threatened by forest service management. I suggested stringent logging practices on Alaska Forest Service lands in so far as select logging only and all streams be protected from logging and the resource being milled to a final product in Alaska.

The fisheries resource is being threatened by the mining industry of Alaska. Please apply the most stringent standards to protect the fishery resource. There should be no mill tailings in any Alaskan water, whether those waters come out of Canada or not. The water should be treated before dumping into Alaskan waters. The clean water act was written to be adhered to and it still is not tough enough standard. The mining industry should have to follow a multitude of biological studies of local and marine environments. "Baffle" dry tailings into the mine as much as possible and use dry tailing disposal instead of barge dump.

From my observations industry gets a free for all on Alaskan resources while the local fisheries resources are being cutback and limited to the point of economic distress. Our children will need an economic base and I hope the fisheries is still there for them as it has been for mine and the many generations of Alaskans that I come from. The thought of management destroying a wild habitat frightens and angers me. Lets protect Alaskan resources as much as possible.

79.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

79.2

Please see response no. 5.2.

79.3

Please see response no. 7.4.

Attest in testimony,

Patricia Phillips

Patricia Phillips

Ms Patricia Phillips
P O Box 33
Pelican AK 99832

Re: Kensington Mine Draft EIS

Dear Ken,

Sorry this letter is late - but it's summertime in Alaska and I have been travelling for the past 2 months and just now catching up on letters. I don't understand why the comment period for this Draft EIS falls in the middle of the summer when many Alaskans are either working outdoors (fishing, guiding) or playing after another long, dark winter. I hope you extend the deadline so more people can comment.

80.1

I'm most concerned about the potential water quality impacts from the mine. I understand they have a right to extract the minerals, so my comments are focused on how best to do that and still protect the environment. I would encourage you to direct the Kensington folks to backfill their mine with the tailings so no tailings disposal is needed. It makes no sense to have ~~that~~ empty mine shafts that could be filled with the rock that originally was removed and have a valley filled with tailings ~~that~~ behind a dam that would have to be monitored and maintained forever. If any tailings disposal is needed, please direct that a dry tailings method be implemented. No dam should be built as all dams will fail someday and whatever is behind them will move downhill and into receiving waters - in this case Lynn Canal.

80.2

80.1

Please see response no. 1.1

80.2

Please see response no. 7.4.

80.3

Other mine water must be treated in a wastewater treatment process, as must any water that comes from a tailings dam. The technology exists to build such a plant and dumping this toxic water directly into Lygon Canal is unacceptable.

80.3 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

80.4

As for Juneau, the mine operators must bear the financial burden of increased social services; schools brought on by their workers. It is not fair to the taxpayers in Juneau to pay for increased services so directly linked to a development project. Those figures are easy to calculate and must become part of the cost of doing business.

80.4 Please see response no. 5.4.

Thank you for the opportunity to comment.

J. Stratten

Jim Stratten

PO Box 101034

Anchorage, AK 99510

Forest Supervisor,

8/7/71
As a resident of Southeast Alaska I'd like to express my concern of inevitable pollution to our waters of Tynen Canal due to the dumping of waste into a "mixing zone", by the Kensington mining operation. I'd like to see Alaska and all its beauty and purity preserved at all costs. Let us as a country do without if that's what it takes.

Let's go to alternatives of disposing of the waste such as dry tailings disposal instead of this dam or backfill dry tailings into the mine as much as possible, and how about further and additional biological studies of marine environment. I urge you to at least that oil water & waste to state & federal spaces. Before dumping it into our beautiful, clean waters of Tynen Canal. Thank you for considering my and many other proposals to protect our natural environments.

Lain March, Sr.

Box 2401

Sitka AK 99835

81.1

Please see response no. 7.4.

81.2

Please see response no. 5.2.

81.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

81.1

81.2

81.3



CITY OF HAINES, ALASKA

P.O. BOX 1049
HAINES, ALASKA 99827
(907) 766-2231 • TOURISM (907) 766-2234 • FAX (907) 766-3179

August 8, 1991

Kenneth E. Mitchell
District Ranger
U.S. Forest Service
Juneau Ranger District
8465 Old Dairy Road
Juneau, AK 99801

Re: Kensington Proposed "Mixing Zone"

Dear Mr. Mitchell:

The City Council, at its regular meeting of August 7, 1991, voiced its agreement with the wording in the attached petition and its strong objection to the proposed "Mixing Zone".

The City Council does not favor any mixing zone containing metals, toxics or hazardous materials. Sewage and runoff must be treated to Federal standards. The private sector must follow the same rules and regulations that the public sector must meet, unless proof of no impact can be demonstrated.

The Kensington Mine is outside the legal jurisdiction of the City of Haines, but as all of our renewable resource of ocean fish travel through the waters at the Kensington proposed discharge site, we believe we have a very real concern.

Thank you for considering our objection.

Sincerely,

Frank L. Wallace

Frank L. Wallace
Mayor
CITY OF HAINES

FLW/SVJ

82.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

82.1

From: Craig McCormick
Norman Blank

To: Haines City Council

In consideration of the petitions submitted to the Haines City Council regarding the Kensington Mine.

And in recognition that commercial and sport fishing are established and significant uses in the Lynn Canal and Point Sherman area.

And in recognition that the arrival of a new industry, bringing with it jobs and other economic benefits, should nonetheless not place existing uses and industries at risk.

Be it resolved that:

- (1) we support the development of the Kensington Mine in a fiscally sound and environmentally conscious manner; and, that
- (2) we ask the Alaska Department of Environmental Conservation and the U.S. Forest Service to prohibit the use of a mixing zone at the Kensington facility.

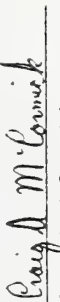
Dear Sirs,


The Kensington Mine Project has the potential to impact the economic welfare of residents whose incomes depend on the marine resources of Lynn Canal. This concern is evidenced by the enclosed petition containing 135 signatures. This petition contains the signatures of 43 drift gillnet fishermen who depend upon these waters for their livelihood.

The petition clearly indicates that the proposed mixing zone for mine effluent is totally unacceptable. The signators feel strongly that no pollutants be discharged into our waters. Any proposals for marine discharge must be supported by thorough studies of marine resources prior to the design stage. The current mixing zone proposal lacks any credibility due to a failure to build upon a thorough understanding of the physical and biologic processes in this area. Assurances based on generalities and lacking in site specific data will be met with strong resistance.

We would appreciate your support for our concerns. The apparent "fast tracking" of the Kensington permit process needs to be adjusted to allow the thorough review necessary for a project of this magnitude.

Sincerely yours,


Craig A. McCormick


Norman Blank

PROTECT PT. SHERIDAN FISHERY

We the undersigned request that the U.S. Forest Service require the following before any permits are granted for the Kensington Gold Mine operation at Point Sherman

- 1) No "mixing zone". We request the Forest Service to require the mine company to build a wastewater treatment plant and not allow discharge of any pollutants into Lynn Canal.
- 2) Marine studies are essential. We request the Forest Service to require thorough studies of local juvenile and adult returning salmon, shellfish, and bottomfish use of the Point Sherman area.
- 3) We request the Forest Service require the mine company to develop a long-term plan for maintaining any tailings dam in perpetuity.

Director, Water Division
EPA - Region 10
1200 Sixth Avenue
Seattle, WA 98101

RE: Kensington Venture

We are being asked to judge the Kensington Venture (KV) so that under the Clean Water Act they can be granted a license to pollute the Lynn Canal. The only way I know to judge this project is based on the history and track records of these companies and their industry. The DEIS is silent on the question of KV partners, Coeur d'Alene, and Echo Bay's environmental record despite repeated requests during the NEPA Scoping process to provide documentation of any lawsuits, permit violations, fines or other evidence of their ability to meet water quality standards at their other mines. I request again that the Forest Service provide this information. What have they got to hide?

Both the Red Dog and Greens Creek, Alaska's two newest mines, can't meet the standard of the Clean Water Act. The same NPDES permit is being requested by KV. The Red Dog mine near Kotzebue is operated by Cominco, another Canadian company and partner in the proposed Windy Craggy project. They have been mining zinc and lead for less than two years now at Red Dog. The EPA, ADFG, and ADEC told me Cominco used the "best technology" and did the "best EIS" they had seen ... and yet many "unexpected and unanticipated" events occurred. There have been three major problems at Red Dog: Acid mine drainage (AMD), illegal cyanide discharge, and failures to report violations from their self-monitoring program. Concentrations of zinc have exceeded EPA limits by 4,700 times downstream from the mine. The rivers are stained orange from AMD 20 miles from the Red Dog tailings dam. There were no fish last year 35-40 miles downstream in rivers that once were full of char and salmon.

82.2

Petition signatures are omitted from the FEIS to save space. The entire petition, including signatures, is on file at the Juneau Ranger District for public inspection.

83.1

The Forest Service requested detailed information from the Kensington Venture Partners on their environmental records. The information submitted is part of the planning record and is available at the Juneau Ranger District for public review.

We have been told to have faith in our government but what has really happened? The Governor's office came up with a creative solution at Red Dog. ADF&G was told they have no enforcement jurisdiction over waters without fish. The EPA has now cited Cominco with a Compliance Order which notes 134 violations of effluent limitations and 28 separate violations for failing to report these events. That is a total of 162 violations, almost half of the entire time the mine had been operating. Cominco could be fined more than \$5M but the EPA has proposed a fine of just \$125K. Cominco has agreed to \$75K.

The Greens Creek mine has been cited for 81 violations of their NPDES permit and continue to operate out of compliance. Heavy metals are accumulating at the loading facility. Natives report that bottom fish and crabs are no longer found near the outfall. Mine workers report that spills at the loading dock are not reported. They were fined just \$50K.

This industry isn't going to get the message until they are shut down and given multimillion dollar fines. The U.S. Bureau of mines has issued a report which tells us that the mining industry in America has poisoned over 12,000 miles of rivers and streams and 180,000 surface acres of lakes and reservoirs. That is 281 square miles of lakes and enough rivers to stretch from here to Washington D.C. and back twice. To allow this to continue to our Nation's water is criminal. The minimal fines for Greens Creek and Red Dog suggest it pays to pollute.

KV tells us they plan to use the "best available technology" and "best management practices" yet this mixing zone is the worst and cheapest solution. At other Echo Bay mines, they have killed thousands of animals with their careless and negligent use of cyanide and been repeatedly fined. Allowing the KV to use the Lynn Canal as an industrial sewer with a pollution zone buried under water where its impacts can't be seen or properly monitored is not acceptable. If the Red Dog and Greens Creek mines can't control their pollution and meet the standards of their NPDES permits, then why should KV be allowed to go down the same road? Common sense should tell us this NPDES permit process simply isn't working. Are you going to let KV experiment with the waters and fish of the Lynn Canal?

I am opposed to this project unless and until the KV agrees to 100% water treatment and a commitment to do the job right. That means no mixing zone, dry tailings, backfilling waste, suspending the NEPA process until they complete baseline studies as requested by ADF&G, USF&WS, and others. Finally, a continuous, independent on-site monitoring program must be implemented with the ability to shut down the mine for violations to give any credibility to their testing.

83.2

The Red Dog and Greens Creek mines are judged based on their individual performance under the NPDES program. The Kensington Venture will similarly be judged on their performance. EPA and ADEC will use the requirements of the Clean Water Act and its associated regulations, along with cumulative, appropriate experience in the regulatory process to review the NPDES permit application. This is consistent with their responsibilities under the law. Changing the NPDES process would require an act of the United States Congress and is outside the scope of this EIS.

83.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

83.4

Please see responses no. 4.5 and 7.4.

83.5

The Forest Service and EPA will, as part of the permit approval process require some duplicate sampling for independent analysis by laboratories chosen by the agencies. The frequency and extent of these requirements has not yet been determined.

Sunday, August 18

To Whom It May Concern:

The mining procedures allowed at the Kensington operation will set the precedent for future mining in our state. It is vitally important, therefore, that the Kensington Mine be as financially viable and environmentally safe as possible given today's knowledge. Ecology and finance do not have to be at odds here. If the mine is run properly, it can be an environmental stance, the later costs of clean-up and lawsuits and lost quality of life can be saved.

A "mixing zone" is a sad joke. To throw the proposed levels of poisons such as cyanide, copper, lead and mercury into the ocean is folly. We have no accurate assessment of the impact of such action, but logic tells that it can't be good. At the very least, conduct more biological studies addressing the problem of what happens to the marine environment if such toxics are put into it.

I also can't see the logic of the huge proposed dam for tailings. Putting the dry tailings back into the mine from which it came makes much more sense. A huge dam has to be maintained forever. It blights the landscape forever. It might save the mining company money, but it won't save money.

The conservation groups are referring to the mining procedures as presently proposed as "Mixing Zone Madness." It is, indeed, madness. This whole operation needs more study. It needs more thought. Please, no mixing zone in Lynn Canal, no huge dam. Learn from past mistakes.

Thank you for your time.

Sincerely,
Pamela Hardy

84.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

84.2

Please see response no. 5.2.

84.3

Please see response no. 7.4.

84.4

Please see response no. 7.5.

84.1

84.2

84.3

84.4

Mr. and Mrs. Peter D. Koch
P.O. Box 70001
Bellevue, WA 98007
August 21, 1991

Mr. Ken Mitchell
U.S. Forest Service
8465 Old Dairy Rd.
Juneau, AK 99801

Dear Mr. Mitchell:

Having spent several summers in Southeast Alaska, we were very disturbed to hear of the proposal to build the Kensington gold mine along the scenic Lynn Canal. The canal is a popular destination for tour boats which specialize in showing Southeast Alaska's spectacular wilderness. A huge mine would diminish the area's attractiveness considerably. Since tourism is a prime industry there, the mine could have serious consequences.

Fishing is another mainstay of the local economy which may suffer from the mine. Kensington's proposal to discharge tailing pond water, which would contain excess levels of heavy metals, into the canal could adversely affect salmon and other fish. More thorough studies need to be done in the area of fishes there, e.g., bottom fish, crab, etc.

From what we have read, the best method of disposing of the tailings would be "backfilling" to put the tailings back into the mine. Tailings which cannot be backfilled should be disposed of in a dry form. If a tailings dam is needed, the company should be forced to build a water treatment plant to fully treat the discharge, so that no pollutants would go into the canal. Furthermore, it should be required to prepare long-range plans for the maintenance of the dam.

Before the proposed mine is approved or rejected, it is necessary to have more detailed information about its impact on the nearby communities of Haines and Juneau in such areas as housing, schools and social services.

We urge all agencies concerned with the mine to study carefully the impact it would have on the economy and social services of the nearby communities before making decisions which have wide-ranging effects.

Sincerely,

PETER D. KOCH

Peter + Christine Koch

Mr. and Mrs. Peter D. Koch

85.1

Please see response no. 4.3.

85.2

Please see response no. 5.2.

85.3

Please see response no. 7.4.

85.4

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

85.5

Please see response no. 7.5.

85.6

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.



UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
P.O. Box 21668
Juneau, Alaska 99802-1668

August 21, 1991

Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

We have reviewed the Draft Environmental Impact Statement (DEIS) for the Kensington Ventures's proposed gold mine north of Juneau, Alaska, and offer the following comments:

General comments

The DEIS describes five project alternatives and selects a preferred alternative that is a modification of the applicant's proposal. The specific rationale for selection of the preferred alternative is not explained in the DEIS, and should be. The document states that the preferred alternative was identified "based on a consideration of estimated environmental effects and comparison with evaluation criteria," but does not describe the specific factors and trade-offs considered. This should be rectified in the FEIS. From our perspective, Alternative E - Dewatered Tailings Disposal appears most likely to provide maximum protection to aquatic resources, and warrants further consideration.

Relative to the marine discharge, more specific information is needed to discern any differences in the environmental effects of the various alternatives. For example, presumably the effluent volume discharged would be less under Alternative E. Although we agree that there is a general suite of potential effects associated with the marine discharge for all the alternatives, for decisionmaking, it is essential to identify the differences.

As noted in the DEIS, the marine environment in the vicinity of the proposed marine discharge supports a diverse community of marine organisms, including several commercially harvested species. To provide protection to these resources and the fishery they support, the feasibility of additional treatment processes to remove metals and cyanide from tailings prior to disposal, or from tailings' effluent prior to marine discharge, should be evaluated. Minimizing the volume of contaminants discharged to Lynn Canal should be given greater priority.

86.1

The impacts of each alternative are fully displayed in Chapter 4. Each of the impacts presented were considered in identifying the preferred alternative in the DEIS.

86.2

Please see response no. 7.4.

86.3

Alternative A (No Action) would have little additional or extenuating water quality impacts except those resulting from reclamation of the current exploration site disturbance.

In terms of displaying differences between potential impacts, Alternatives B, C, and D would all have essentially the same effect on the marine water quality. The discharge from the tailings impoundment from either the Sherman or Sweeny Creek structures are proposed to discharge in the same general area of Lynn Canal. The quantity and quality of the drainage discharged to the marine environment via a constructed outfall provide no real basis for differentiating between the Alternatives as presented.

Alternative E, dewatered or dry tailings disposal, would still require a marine discharge from the proposed dry tailings area runoff, seepage and sedimentation collection pond(s). In addition, the recycled process water from the dewatered tailings would operationally require that a portion of the flow be wasted, and fresh water used to make up the difference. The total calculated flow, runoff plus make-up wastewater, that would be discharged into the marine environment, would vary over the year in a range from 2,000 gpm to a calculated low of approximately 550 gpm. While this flow would be settled, and the particulate portion of any potential pollutants partially removed by settling solids, much the same way as the proposed tailings pond would remove solids, the effluent would, unless other treatment is provided, have expected characteristics similar to tailings pond effluent. For comparative purposes the projected flow from the proposed tailings pond (Alternatives B, C, and D) is expected to range from 5,000 gpm to a low of approximately 900 gpm.

The ability to handle, place and stabilize (compact) dewatered tailings would affect the quality of the runoff and drainage from Alternative E. The more unstable the material, the greater the erosion and runoff potential.


Specific comments:

86.5	Page 3-46: Steller sea lions were permanently listed as a threatened species on November 26, 1990 (55 FR 49204). Based on recent Steller sea lion surveys, Hazy Islands and White Sisters (near Sitka) have been added to the list of rookery sites.	
86.6	Page 4-18: The DEIS states that removing the stream canopy and altering flow patterns will not affect temperature in lower Sherman Creek. What is the basis for this determination? Is it possible to route diverted stream channels through forested areas and thus maintain some vegetative cover?	The project applicant proposes to meet or exceed marine water quality standards for maintaining aquatic life at the edge of the mixing zone as required by the Clean Water Act.
86.7	Page 4-19: Reclamation plans include rerouting Sherman and Ophir Creeks through the tailings facility. The potential that these streamflows will disturb disposed tailings and mobilize tailings-associated contaminants should be evaluated.	Alternative F has been added to the FEIS to address the issue of treatment of some or all of the tailings pond effluent flow prior to discharge. FEIS Chapter 2 provides an evaluation of potential treatment alternatives that were considered. FEIS Chapter 4 assesses the impacts of the project employing the treatment technologies considered.
86.8	Page 4-30: Fish have been shown to accumulate contaminants from a variety of sources, including sediments. The proposed discharge is likely to create an area where sediments, as well as a portion of the water column, have elevated levels of contaminants, such as copper and lead. Fish that feed in or burrow in these sediments will be exposed to contaminants, and may experience adverse health effects or accumulate these substances in their body tissues. The DEIS estimates the area of water column where contaminant levels will be exceeded; if possible, an estimate of the amount of bottom habitat likely to be influenced by the discharge should be provided.	The DEIS provided a projection of effluent water based upon the information available when the draft document was prepared. The FEIS reflects current knowledge of ore processing conditions, hydrology and the treatment options.
86.9	Page 4-33: The DEIS suggests that the marine discharge will not disrupt the salmon fishery, but does not consider possible effects to groundfish or shellfish harvest within the disposal area. The FEIS should evaluate the likelihood that the mixing zone will be closed to fishing, as well as how public perception of contamination may affect fishing in this area. Although fish populations may not be noticeably affected, fishing patterns and perceived value of the catch, and thus, fishermen, may be.	All of the water quality projections to date are based upon the best available information utilizing bench and pilot scale water quality data and hydrologic modeling. Since the reported results in the DEIS and FEIS are in the parts per million and billion ranges the results are going to be very sensitive to even small variations in the bench and pilot scale investigations used to develop a data base for this project. Until the actual facility is constructed and stable operation is achieved, it is impossible to precisely predict the constituent concentrations in the discharge. The applicant has the obligation to meet the water quality requirements established by the regulatory authority as part of the discharge permitting (NPDES) process. In the event the marine aquatic standards cannot be achieved as anticipated using the current draft NPDES stipulation, additional treatment is possible and would have to be provided by the Applicant to satisfy the statutory requirements.
86.10	Page 4-36: Since the proposed water withdrawal for domestic uses is anticipated to exceed minimum stream flow requirements for anadromous fish, other water sources that will not affect instream flows should be identified in the FEIS.	
86.11	Appendix H: The biological assessments should clearly indicate whether the Forest Service believes the proposed project is likely to adversely affect humpback whales or Steller sea lions.	
86.12	Page H-4: The DEIS indicates that low-level helicopter flights or ferry boat traffic may cause Steller sea lions to abandon haulouts in the vicinity. Such an action would be in violation of the Marine Mammal Protection Act, which prohibits unauthorized	
86.13		
86.14		

86.14 takings of marine mammals. Helicopter flights must maintain an adequate height (at least 1000 ft.) over haulouts or flight paths/ferry routes should be altered to avoid haulouts.

We appreciate the opportunity to comment on this DEIS. Our comments on the NPDES and Section 10/404 permit applications will be forwarded to you to aid in developing the FEIS. Further coordination on this project should be directed to Susan Mello at 586-7235.

Sincerely,


Steven Pennoyer, Director
Alaska Region

cc: ADFG, Douglas
FWS, Juneau, Anchorage
Applicant
DGC, Juneau

EPA, Anchorage, Seattle
CE, Anchorage
ADEC, Juneau
ADNR, Juneau

86.6

According to Everest and Harr (1982), southeast Alaska is not located in a high risk zone for damaging habitat of anadromous salmonids as a result of solar heating of exposed stream reaches. Using a calculation outlined in Brown (1970), this general statement regarding the effect of canopy removal along the Ophir Creek diversion on temperature in lower Sherman Creek was confirmed. The analysis shows that water temperature standards will be met. Even though the impact from increasing temperature in the low flow summer period seems slight, continuous temperature monitoring has been initiated in lower Sherman Creek.

86.7

Construction and maintenance of the diversions around the tailings area and the topographic characteristics of the site make it impossible to maintain vegetative cover over the diverted channels during project operations. Following project closure, tree and shrub canopy cover would be reestablished along reclaimed stream channels.

86.8

The design of the reclaimed stream channels will use low gradients and standard design practices to minimize the potential for re-suspension of the tailings. Chapter 2 of the FEIS contains additional information on reclamation goals.

86.9

The assessment has been expanded in the FEIS to include a distribution projection for total solids suspension in the water column and total solids and particulate heavy metal deposition on the sea bed, throughout Lynn Canal. The reader is referred to Chapter 4 of the FEIS and to Kessler and Vigers (1992) for additional discussion. The basic conclusion is that the increase in total suspended solids concentration and sea bed total solids deposition rate would be below measurable amounts everywhere in Lynn Canal.

The predicted low availability of incremental sediment heavy metals combined with the ability of most of the important bottom dwelling organisms to detoxify their tissues precludes any significant bioaccumulation of wastewater constituents. Additional detailed information is available in Kessler and Vigers (1992).

86.10

Potential effects to groundfish and shellfish populations were considered on page 4-31 of the DEIS, but the harvests of these species was addressed only indirectly. Additional discussion has been included in the FEIS. See Chapter 4.

; The NPDES permit (see Appendix D) would require on-going monitoring of direct toxic effects as well as bioaccumulation within indicator species. Results of this monitoring will provide a basis for demonstrating any potential health concerns. No closures of the area to fishing are expected.

ADF&G data does not indicate significant catches of groundfish and shellfish, in the project area.

86.11

Based on the DEIS and FEIS analysis which shows no impact to fish as a result of the mixing zone, there is no reason to expect that the area would be closed to fishing. The only foreseeable impacts to perceived value of the catch from this area would result from public campaigns designed to cast doubt on the catch. The Forest Service cannot speculate on the probability that some group may undertake such a campaign.

86.12

Possible sources of alternative water supply are ground water wells and mine drainage. These alternate sources will be needed infrequently during low flow periods and will have no measurable effect on flow in Sherman Creek.

86.13

The biological assessment has been revised in the FEIS (see Appendix B). The revised assessment states that the proposed project will not adversely affect humpback whales or Steller sea lions.

86.14

Please see the revised Biological Assessment (FEIS Appendix B).

August 22, 1991

Ken Mitchell
U.S. Forest Service
8465 Old Dairy Rd.
Juneau 99801

Dear Mr. Mitchell,

I have spent today reading through the Draft Environmental Impact Statement for the Kensington Gold Project and I have several concerns about the issues and various alternatives discussed.

1) The very concept of a mixing zone seems flawed for the following reasons:

a. Any concentration of a pollutant can be diluted given enough water. But those pollutants, largely heavy metals are still in the water, they have not disappeared. They will accumulate somewhere in the ecosystem and they will degrade the water quality of Lynn Canal.

b. There does not appear to have been any study or discussion of the probable accumulation of the heavy metals in pockets or tidal eddies in Lynn Canal. The dynamics of a stream will deposit and concentrate placer gold in local areas. I expect similar dynamics will occur in the Canal.

c. The DEIS does not address what the effect of 12 years of chronic low level pollution will be on Lynn Canal and its ecosystems. As indicated above, the pollutants do not disappear, and it has become clear particularly with some diseases such as cancer, that a toxin can cause injury or harm after many years of low level exposure.

d. I have talked to various people in the EPA and the State Department of Environmental Conservation and have learned that Green's Creek Mine regularly exceeds its permit limitations especially for free cyanide and pH levels. What assurances do we have that Kensington will not as well?

e. There is not currently a precise method in which to measure free cyanide. Yet this form of cyanide is the most toxic. Given the immense amount of cyanide used in the extraction process and its extreme toxicity, it is essential that an acceptable means of measuring it is found. If no method is available, no cyanide of any form be allowed in the mine's effluent.

87.1

Please refer to Chapter 4 of the FEIS for a discussion of how dilution and flushing processes interact in controlling the receiving water distribution and ultimate fate of wastewater contaminants. Virtually all projected wastewater constituents occur naturally in Lynn Canal and if dilution reduces wastewater additions to below the accepted standard, then by definition the water quality has not been significantly degraded. Two questions must be answered: 1) What is the distance from the outfall where dilution is achieved; and 2) Is renewal of the receiving water adequate to prevent the slow increase in background concentration. Under extreme worst-case conditions, dilution rates are predicted to be sufficient to achieve State and federal ambient standards within a short distance from the outfall (i.e., edge of a small initial mixing zone). A conservative estimate of the Lynn Canal flushing rate (i.e., a calculation biased towards under-estimation) indicates that the water renewal rate will always be sufficient to limit the long term increase of any wastewater constituent either to below the present analytical detection limit or to within the present measured natural environmental variability. For reasons that are presented in Chapter 4 of the FEIS, the latter applies to all regions of Lynn Canal including the suggested eddy re-circulation zone located to the north of Pt. Sherman.

87.2

The Forest Service, EPA and ADEC will enforce the laws to the best of their ability with the resources allocated to them. Please note that the information available to the Forest Service shows that Greens Creek has never been cited for violation of cyanide discharge limits. All citations have involved other constituents. The Greens Creek mine NPDES violations have all been violations of the end-of-pipe standards; there have been no violations of water quality standards outside the mixing zone.

87.3

EPA regulates cyanide based on total cyanide analysis. The total analysis includes all toxic (reactive) forms of cyanide as well as benign compounds. This provides a built-in margin of safety since the criteria used to develop the regulation assumes that the total cyanide reading represents reactive forms of cyanide only.

87.1

87.2

87.3

f. I have learned that the State DEC has not even a procedure in place to enforce the State's own water quality standards. I have also learned that the one enforcement person in DEC has left and that there are currently no plans to replace him. Given the current and perhaps subsequent administrations' lack of zeal in enforcing environmental regulations, and its emphasis in reducing the State budget, what assurances does the public have that Kensington will be properly monitored, and if necessary held liable for permit violations? A case in point, is the State's miserable oversight of the oil response capabilities of Alyeska.

In light of the toxicity of the proposed discharge, of the difficulty of accurately measuring free cyanide, of the evidence of lax and ineffectual monitoring and policing of other industries operating within the State and of the rich and productive fishery supported by Lynn Canal, I believe that Kensington should not be permitted to discharge any pollutants of any sort or concentration into Lynn Canal.

If Kensington is permitted to discharge heavy metals into the Canal, then the monitoring data must be made readily available to the public. Currently we must submit a Freedom of Information Act request, which is tedious and time consuming. The data is effectively hidden from public review. I think that both the raw data and the EPA NPDES Violation report should be made available at local state agencies and at the Public Libraries of the communities involved. In addition, I believe that the monitoring process itself should be open to public inspection. Any citizen who wishes to inspect the method by which water, sediment and other samples are gathered should be so permitted.

2) The potential for dam failure was not adequately addressed. A failure that caused several million tons of tailings to drain into the Canal would be catastrophic. Dam construction and design were glossed over. Reasons for choosing the dam as opposed to the dry tailings method were not adequately addressed.

3) The DEIS indicated that it was not feasible to backfill the tailings. But it appeared that it was not feasible only when the mine was still in operation. Why can not those tailings that can be backfilled be done so after the mine has stopped producing? If the dry storage of tailings alternative is selected, why can not these tailings be used as backfill since, their water content will be no more than 14% and their dewatering characteristics would not then be an issue?

4) The DEIS itself, predicts that the city will lose money over the life of the mine. I think it should be incumbent on Kensington to pay the City of Juneau for all social and economic costs associated with the mine, bringing so many workers. This includes new schools, required upgrades to utilities, social programs and the like. The company should also pay for any impact caused by the closing of the mine, particularly if there are interim closures. These would include the severance pay of teachers, city employees and others who are laid off as people leave Juneau.

In summary, I think that the social, economic and environmental costs and risks associated with the Kensington Mine Project exceed its few, short term benefits. It should not be permitted to proceed.

87.4

The Forest Service has forwarded your concerns to the State. The FEIS includes an expanded discussion for monitoring including frequency and response time.

87.5

The monitoring process is open to public inspection. You may contact the permitting agencies to review monitoring data and methods.

87.6

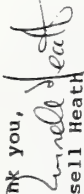
The proposed tailings dam will be designed to meet or exceed the standard of practice for tailings dams in similar geographic and seismotectonic settings. Final dam design must be reviewed and approved by technical specialists from the State, CBJ and Forest Service. A potential failure of the structure may result from an earthquake event which exceeds the Maximum Credible Earthquake (MCE). An event of this size would also result in mass destruction in southeast Alaska.

87.7

Please see response no. 7.4. Backfilling the tailings after close of operations would reduce the quantity to be stored permanently on the surface. The quantity remaining in surface disposal would be between 7,200,000 and 12,000,000 tons depending on final ore reserves. The small reduction in surface environmental impacts realized by reducing the surface disposal to this level cannot justify the expense and additional environmental effects of rehandling the tailings after closure.

87.8

Please see response no. 5.4.

Thank you,

 Russell Heath
 245 Marine Way #7
 Juneau, AK 99801

Phyllis Woolwine

Alaska Address
Box 2194
Wrangell AK 99329
(907) 874-3645

If Kensington is given the privilege of developing a mine of such size on wilderness land which is the rightful property and concern of every Alaskan, then Kensington must be required to go to every extent to protect the terrestrial, marine, and riparian environments they will influence. How can it be justified that Kensington makes such profits at the loss of so much to fishing industry, tourism, and Alaska residents, not to mention the marine life and wildlife itself.

Toxic levels in the proposed "mixing zone" for ~~cyanide~~ of cyanide, copper, lead, and mercury far exceed acceptability for biological (including human) wellbeing. I strongly oppose a mixing zone ^{in Lynne Canal} Lynne Canal. In the interest of ^{other} values (other than solely the immediate gain of Kensington) of great importance, please require that all water is tested to state and federal standards ~~before~~ dumping it into Lynne (and

I am also distressed that this mine may go in ~~it~~ and be operated using methods which don't reflect appropriate knowledge of marine ecology and

88.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

88.2

Please see response no. 5.2.

88.1

88.2

88.2

Oceanography at the site. I urge you to require that additional marine biological studies be conducted there and reported publicly before ~~the~~ mine development begins.

88.3

It would seem much more environmentally sound to use dry tailings disposal rather than a huge clam, and to backfill these tailings back into the mine. This would give ~~for~~ more protection to other values and resources.

88.3

Please see response no. 7.4.

I must re-emphasize that it is your responsibility (USFS) and our right (American citizens) that when a mine is developed, ~~that~~ our environment and our other resources (wildlife, recreation, fish & marine life) are maximally protected.

Sincerely,

Phyllis Woolwine

Phyllis Woolwine

BOX 62

TENAKEE SPRINGS, AK 99841

AUG. 25, 1991

KEN MITCHELL, US FOREST SERVICE

8465 OLD DAIRY ROAD

JUNEAU, AK 99801

DEAR MR. MITCHELL:

One year ago my husband and I were able to arrange a state loan and buy a salmon gillnet permit for SE Alaska. We sold our home in order to buy a boat and cover our initial start-up costs. We hope now to build up a fishing business that will be profitable in a few years.

I am totally opposed to any industry that will threaten the fishery in the Lynn Canal. I see the proposed Kensington mine as such a threat.

I do not oppose the mine per se; however, it is acceptable only under the following conditions:

89.1

1. No mixing zone in Lynn Canal - build a wastewater treatment plant.

89.2

2. Conduct additional biological studies of the marine environment in the Point Sherman area so that marine impacts are not speculative.

89.3

3. Use dry tailings disposal instead of a huge dam.

4. "Backfill" dry tailings into the mine as much as possible.

Thank you for your attention. Please take responsible and safe precautions in this venture.

Sincerely,

Katy White

Katy White

c. John Halterman, Juneau Planning Commission

Director, US EPA

89.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

89.2

Please see response no. 5.2.

89.3

Please see response no. 7.4.

BOX 62
TENAKEE SPRINGS, AK 99841
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I do not oppose the mine per se; however, it is acceptable only under the following conditions:

1. No mixing zone in Lynn Canal - build a wastewater treatment plant.
2. Conduct additional biological studies of the marine environment in the Point Sherman area so that marine impacts are not speculative.
3. Use dry tailings disposal instead of a huge dam.
4. "Backfill" dry tailings into the mine as much as possible.

Thank you for your attention. Please take responsible and safe precautions in this venture.

Sincerely,

John White

c. John Halterman, Juneau Planning Commission

Director, US EPA

90.1

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

90.2

Please see response no. 5.2.

90.3

Please see response no. 7.4.

90.1

90.2

90.3



Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

Re: Draft Environmental Impact Statement Kensington Gold Project

Dear Mr. Mitchell:

This letter contains the comments of the Alaska Electric Light and Power Company (AELP) on the Draft Environmental Impact Statement (DEIS) Kensington Gold Project dated June 1, 1991. AELP is an investor owned electric utility certified by the Alaska Public Utilities Commission to provide electric service to most of the City and Borough of Juneau (CBJ).

In an overall sense AELP believes the Kensington DEIS to be a fair and complete statement on the impacts of the Kensington Gold Project. It is clearly written and well illustrated. Based on the information contained in the DEIS AELP believes the Kensington Mine should be allowed to be developed. AELP makes the following suggestions which will further improve the DEIS.

1. The DEIS does not address the alternative of extending to the Kensington Mine the electrical transmission system which links the CBJ with the Snettisham Hydroelectric Project. Snettisham is owned and operated by the U. S. Government and is the primary source of firm electric energy for the CBJ. Currently there is substantial excess energy available from Snettisham. The proposed A-J Mine is expected to utilize this energy. If the A-J Mine were not developed Snettisham would have sufficient energy to accommodate all of the Kensington Mine electrical energy needs. Due to the fact that Snettisham is a long distance from the CBJ load center and its transmission line is vulnerable to the natural elements, AELP has found it necessary to install backup diesel generation facilities within its load center. It would probably be necessary to install additional backup generation for Kensington if it were supplied with Snettisham energy. From an electric perspective it would be preferable to place the Kensington backup facilities at the Mine.

2. AELP is keenly aware of the national effort to conserve energy. It is puzzled by the Forest Service's proposal to move the generators which will serve the Kensington from the Mine entrance to a location closer to tidewater in order to minimize the noise for the mountain goats. It was the intent of the Mine owners to utilize the excess heat from the generators to heat the camp and the Mine. If the generators are not located at the Mine entrance some other source of heat must be developed. This is energy inefficient and wasteful. AELP believes the technology is available to dampen generator noise and should be used in order to allow the generators to be located at the Mine entrance as proposed by the Venture.

Thank you for giving AELP the opportunity to comment on the Kensington DEIS.

91.1

In order for an alternative to meet the NEPA test for reasonableness it must be one that can be selected at the culmination of the analysis. Thus, as long as the AJ project remains a viable proposal this alternative could not be selected as the preferred alternative. The environmental impacts of extending power lines to the Kensington site and bypassing AJ would not be justifiable. This renders the alternative a straw proposal that does not meet NEPA screening criteria at this time. If, at some future time, AEL&P chooses to submit a proposal for extension of power lines to or past the Kensington site, the Forest Service will participate with other federal agencies in preparing NEPA documentation on the proposal.

91.2

Please see Chapter 4 of the FEIS for additional discussion of impacts of moving the generators.

Very truly yours,

James S. Webb
James S. Webb
President



Mr. Kenneth E. Mitchell
District Manager
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

RE: Draft Environmental Impact Statement Kensington Gold Project.

Dear Mr. Mitchell:

This letter contains the comments of the Haines Light & Power Co., Inc. (HLP) on the Draft Environmental Impact Statement (DEIS) Kensington Gold Project dated June 1, 1991. HLP is an investor owned electric utility certified by the Alaska Public Utilities Commission to provide electric service to most of the City of Haines.

In an overall sense, HLP believes the Kensington DEIS to be a fair and complete statement on the impacts of the Kensington Gold Project. It is clearly written and well illustrated. Based on the information contained in the DEIS, HLP believes the Kensington Mine should be allowed to be developed. HLP makes the following suggestions that further improve the DEIS.

1. HLP is very concerned about the long term prospects for the Haines economy, primarily due to its vulnerability to the Chilkoot Lumber Mill. Currently the Mill is closed down and Haines has the highest unemployment rate in the State of Alaska (see the enclosed article from the Chilkat Valley News, dated August 8, 1991). This is not the first time Haines has experienced such an economic calamity due to the Mill closure. A reliable employment base for Haines is in the best interest of HLP's electric customers. Fluctuations in annual electric consumption, generally correlate with the economy, and ultimately result in higher electrical rates. The Kensington Mine offers the opportunity to provide a stable employment base for Haines. In reading the DEIS, the emphasis is placed on the adverse socio-economic impacts on Juneau, and does not fully consider the opportunities the Kensington offers to improve and stabilize the economy of Haines. The nearby communities of Hoonah, Angoon and Yakutat can benefit from the Kensington as well.

2. Over the years the possibility of linking the communities of Southeast Alaska with an electrical transmission system has been under consideration. Once such a system is in place it will be possible to build large and efficient generation facilities to serve more than one community. The most difficult link to justify economically is the segment between Haines/Skagway and Juneau. Development of the Kensington Mine will bring the Haines/Skagway - Juneau link one step closer to economic feasibility.

3. HLP is keenly aware of the national effort to conserve energy. It is puzzled by the Forest Service's proposal to move the generators that will serve the Kensington from the Mine entrance to a location closer to tidewater. This is done to minimize the noise for the mountain goats. It was the intent of the Mine owners to utilize the waste heat from the generators to heat the camp and the Mine. If the generators are not located at the Mine entrance, some other source of heat must be developed. This is energy inefficient and wasteful. HLP believes the technology is available to dampen generator noise and should be used to allow the generators at the Mine entrance as proposed by the Venture.

92.1

Please see Chapter 4 of the FEIS for an expanded discussion of socioeconomic impacts to Haines.

92.2

Please see Chapter 4 of the FEIS for additional discussion of impacts of moving the generators.

Very truly yours,

Carry V. Hildner
Carry V. Hildner
President



NATIONAL WILDLIFE FEDERATION

750 W. Second Ave., Suite 200, Anchorage, AK 99501 (907) 258-4866
JUNE 30 1991
RANGER DISTRICT

Working for the Nature of Tomorrow.

August 28, 1991

Mr. Kenneth E. Mitchell
District Ranger, Juneau Ranger Dist.
Tongass National Forest
8465 Old Dairy Road
Juneau, AK 99801

Dear Mr. Mitchell:

The National Wildlife Federation (NWF) appreciated your extension of the comment period on the Kensington Gold Project Draft Environmental Impact Statement. Enclosed are our comments on that document, as well as copies of our comments to the Alaska Department of Environmental Conservation (ADEC) and the Environmental Protection Agency (EPA) on the section 401 water quality certificate and draft section 402 (NPDES) permit, respectively. These latter comments are submitted in lieu of detailed comments on the water quality portions of the DEIS.

NWF found the text of the DEIS generally clear and readable, but the format difficult. The absence of an overall table of contents and an index handicap the reader, as does the lack of cross-referencing by page or section identifier. Even the large size of the document is cumbersome. More importantly, the DEIS has several substantive flaws, notably in its discussions of the potential impacts on water quality, wildlife and wildlife habitat, commercial fisheries, employee health, and the Juneau and Haines communities. We first discuss our general concerns (not necessarily in order of priority) and then proceed with a page-by-page analysis.

First, the treatment of cumulative impacts is conclusory and superficial. It does little to inform decision makers about the real impacts of this development and other existing and reasonably foreseeable facilities. Indeed, the DEIS often entirely overlooks the effects of existing developments in the region.

Second, the DEIS also anticipates that decisions will be made before crucial baseline studies necessary to adequately characterize the existing environment and reliably predict impacts have been completed. This

DISTRICT RANGER
DEPUTY RANGER

TLM
REC
F&W
BM
VIS

93.1

A table of contents has been added to the FEIS, and the final document is published in 8 1/2 x 11 format.

93.2

The DEIS does not anticipate decisions except those allowable under Forest Service and NEPA regulations. The Forest Service has examined baseline data for adequacy a number of times during development of both the DEIS and the FEIS. Please see the planning record for documentation of this process.

Mr. Kenneth Mitchell
August 28, 1991
page 2

approach mocks the purpose of the EIS. See Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 558 (1978) (purpose of EIS is "to insure a fully informed and well-considered decision").

Third, mitigation gets short shrift in the document. The CEQ regulations contemplate considerably more importance for this subject. They require that the alternatives section "shall ... include appropriate mitigation measures not already included in the proposed action or alternatives," 40 CFR § 1502.14(f), and that the environmental consequences section must include a discussion of "means to mitigate adverse environmental impacts (if not fully covered [in the alternatives section])." Id. § 1502.16(h).

The rarity of references to "mitigation" in the alternatives and environmental consequences sections of the Kensington DEIS raises considerable doubt whether there has been compliance with the CEQ rules. Although the DEIS claims that "project descriptions contained in Chapter 2 [Alternatives] include mitigation measures which were developed to limit the occurrence or severity of environmental impacts," DEIS at 4-1, it is often not apparent whether or to what extent mitigation was actually considered. Furthermore, the mitigation measures discussed beginning at page 2-41 are so broadly or imprecisely described it is difficult in many cases to determine how they will relate to specific alternatives, or how they have been implemented in specific alternatives. (For instance, how has stream habitat loss been minimized, DEIS at 2-43, in the preferred alternative?) In other cases the reference to mitigation is either ambiguous or reveals that mitigation planning will be postponed until later stages of project development.

For example, at page 2-3, the DEIS states: "Mitigation and environmental management as well as monitoring and control measures need to ensure that the final actions conform to all other applicable laws relating to the Forest Service activity." It is misleading to suggest that measures taken to ensure that a development action complies with a specific statute or regulation (for instance, that a discharge meets water quality requirements, or that the Forest Service's reclamation requirements are met, see, e.g. DEIS at 2-47) constitute

93.3

As stated in the DEIS at page 1-5, Agency Responsibility (Permits and Approvals), an EIS is designed to explore project alternatives and discuss relative environmental impacts. An EIS must discuss mitigation in sufficient detail to predict the probability of success where the analysis of consequences is dependent on mitigation. The permitting process gives individual agencies the authority to grant permits with requirements and conditions to eliminate and/or mitigate adverse environmental impacts identified in the EIS. Therefore, the mitigation measures in the EIS are more general in nature and are intended to control the magnitude of an impact, such as requiring revegetation for reclamation. Design level mitigation, such as actual plant species to be used and method of seeding, is more appropriate in the permitting phase. Monitoring is used to measure the effectiveness of the mitigation measures. The monitoring identified in the EIS is not intended as a substitute for mitigation.

Mr. Kenneth Mitchell
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"mitigation" in the CEQ sense of the term. See 40 CFR § 1508.20. This interpretation would render the CEQ mitigation requirements a redundancy.

The term mitigation is used incorrectly in other ways, for instance, to include monitoring requirements or standard engineering practices. See, e.g., DEIS at 2-47 to -48; 3-40; 4-48. Monitoring is not a form of mitigation, under either the dictionary or CEQ definition of the term. See 40 CFR § 1508.20 (CEQ definition). Monitoring (if designed and conducted properly) simply provides information concerning the magnitude and frequency of impacts, or the effectiveness of a particular effort to reduce impacts. It does nothing itself to avoid or alleviate impacts. Monitoring can be related to a mitigation program if it is predetermined that a particular finding will trigger some action to lessen impacts.

Fourth, the DEIS is flawed by the lack of any discussion of this facility's contribution to global warming or depletion of limited fossil fuel reserves. Although these impacts may not have been usual components of environmental impact statements in the past, they must begin to receive serious consideration. Continued lack of attention to the additive environmental effects of all fossil fuel-burning projects will only exacerbate widespread problems such as global warming and acid deposition and prolong the achievement of solutions to those problems. It is no longer justifiable to rationalize ignoring these impacts on the basis of insignificant individual effect or uncertain scientific knowledge. See 40 CFR § 1508.7 (definition of cumulative effect).

Fifth, the DEIS's treatment of employee health and safety is too cursory. Experience at other mines provides lessons concerning potentially significant employee health and safety hazards, such as exposure to unsafe noise levels and airborne toxicants. These issues are entirely overlooked in the DEIS.

Sixth, the feasibility of cut and fill mining (including backfilling dry tailings) needs to be further evaluated. See DEIS at 2-29 to -20. This option should not be discounted if the principal objection to it is cost. At least two of the reasons cited for not further evaluating this option are subject to question. First, the

93.4

Global warming is a relatively recent concept that is undergoing scientific research. No conclusive evidence has been developed either proving or disproving that it is occurring. Without conclusive scientific evidence documenting global warming, it is beyond the scope of this EIS.

93.5

Employee health and safety was not identified as an issue in the scoping process, except in relation to transportation systems and mining methods.

93.6

Please see response no. 7.4.

93.4

93.5

93.6

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concern that the "extent of ore deposit at depth" is "unknown," DEIS at 2-20, surely exists for all new mining operations. Yet cut and fill mining is being used at the Greens Creek mine. Second, "surface preparation of tailings for fill," *id.*, should not be a reason to eliminate the cut and fill mining method, since all other alternatives require "surface preparation of tailings" as well. On the other hand, the environmental advantages of this mining method (less surface disturbance, no water discharge or smaller discharge, etc.) are such that it warrants more thorough evaluation that it has received.

And finally, NWF's principal concerns over this project relate to compliance with state and federal water quality regulations. Rather than restate the questions and concerns we have posed to the relevant regulatory agencies (ADEC and EPA), however, we include with this letter copies of our comment letters to those agencies regarding the section 401 water quality certificate and draft section 402 permit. Those letters address such issues as the adequacy of baseline water quality sampling, the selections of applicable water quality standards, the need for and justifiability of a mixing zone, and the adequacy of monitoring and reporting requirements. We ask the Forest Service to accept all comments contained therein that are relevant to this DEIS. Where the DEIS raises additional matters not addressed in those letters, we have commented herein.

In addition to the comments included in those letters, we offer these thoughts on the dry tailings alternative (Alternative E). The alternative is decidedly attractive in that it would avoid the necessity of a potentially toxic discharge to Lynn Canal or other waters. However, NWF has serious doubts, based on information available in the DEIS (see *id.* at 4-21), about the feasibility and reliability of this technology and its use in a high-precipitation area such as the KV project site. The potential for both wind and water erosion, the purportedly greater power requirements, the apparent difficulty of dewatering tailings, the uncertainty of long-term stability--these problems and others counsel the need for caution. A discussion of the Greens Creek mine's dry tailings system would have been useful for purposes of evaluating the application of the technique at Kensington. If it is determined that the wet tailings disposal

93.6

93.7 Chapter 4 of the FEIS contains an expanded comparison of dry tailings versus wet tailings.

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alternatives are unavailable because of an inability to meet water quality standards, this option will need to be further evaluated.

The following page-by-page analysis contains our detailed comments on the DEIS. All comments relate to the preferred alternative unless otherwise stated.

S-3 The DEIS's characterization of the No Action alternative as "a reference point for describing the effects of the alternatives," DEIS at S-3, is misleading. It belittles an important part of the EIS--one of the alternatives required by the Council on Environmental Quality's (CEQ) NEPA-implementing regulations. 40 CFR § 1502.14(d). The no action alternative is not merely a yardstick; it must be a legitimate choice available to the decision makers. (The DEIS does acknowledge this later in the document. DEIS at 1-2 ("responsible official may decide to: Adopt the No Action Alternative".)) The goal of the DEIS is to facilitate reasoned decision making. Certainly, if the DEIS reveals that unacceptable, unmitigable impacts would result from the development alternative(s), responsible officials must have the option of selecting the no action alternative.

We also fault the DEIS's statement of the Purpose and Need for project (at 1-1). This is one of the principal parts of an EIS specified by the CEQ regulations. While the regulations require only a brief specification, 40 CFR § 1502.13, the single sentence in the DEIS devoted to this topic hardly constitutes an explanation of the "need" for a gold mine in this particular location. (The rest of this section has nothing to do with the purpose or need for the project.) The obvious purpose of the project is to mine gold to make a profit for the owners. But "purpose" is not equivalent to "need." (If it were, the use of both terms in the regulation would be redundant.) Thus, the DEIS is lacking a statement of the need for the gold that would be produced by the Kensington mine. See also comment for page 2-22 below.

NWF views this information as critical to the ultimate decision whether the Kensington Project should be developed. An informed decision about this project--the

93.8

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

93.9

Analysis of the No Action alternative "provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives." (46FR 18027) Although the No Action alternative is required by NEPA it is not required to meet the test of reasonableness and may in fact not be legal or implementable. The No Action alternative, in this case, is implementable but would require extraordinary measures including denying the claimants their rights under the General Mining Law.

93.10

"The statement shall briefly specify the underlying purpose and need to which the agency is responding..." (40 CFR 1502.13) The agency is responding to a development proposal from the Kensington Venture as stated in the FEIS. The Forest Service is required by law to respond to private initiatives of this type.

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goal of the NEPA process--cannot be made unless costs and benefits are thoroughly understood. Determining the acceptability of the adverse (and uncertain) impacts of the project can only be assessed against the background of benefits and need--whether there is a need for gold (or for another gold mine near Juneau) and, if so, the extent of that need.

2-3 The DEIS reports that "detailed prescriptive mitigation measures" will be included in KV's operating plan to be submitted to the Forest Service, "following completion of the NEPA process." This approach improperly delays the consideration of mitigation required by the CEQ rules, particularly in light of the lack of detail that mitigation receives in the DEIS.

2-8 The DEIS states that alkaline chlorination is the "most widely recognized" such process and the "best available treatment process" for use at Kensington. Yet Echo Bay Exploration's choice for the A-J Mine was an SO₂/air process. Neither DEIS explains the reason for its respective choice, nor the environmental consequences of the processes. For this discussion to be useful, additional information is needed.

2-9 What assurance is there that a 270-foot dam will be sufficient to contain all tailings generated during expected life of project? If more capacity becomes necessary, can dam height be increased? Safely? Or will another tailings disposal site be required? This possibility and the potential impacts should be addressed. It is disingenuous to weigh the relative impacts of alternative disposal sites if there is a foreseeable chance that more than one of those sites will ultimately be required for tailings disposal.

Experience at other mines demonstrates that tailings pond capacity is often underestimated when mining plans are formulated (e.g., Cominco's Red Dog mine near Kotzebue; the former Freeport Gold Company's Independence mine near Elko, NV). In such an event, the only alternative generally is to raise the tailings dam. Would that be a feasible option here if the tailings pond capacity proves inadequate? What additional impacts would result? The consequences in this case of underestimating tailings storage needs could be drastic and should receive careful consideration before permits are issued.

93.11

Discussions of mitigation in the FEIS have been expanded to identify the objectives to be met in the detailed design of mitigation in the Plan of Operations. The discussion of mitigation in the FEIS is at a level that allows a reasoned judgment of effects. Please see response 93.3.

93.12

Alkaline chlorination has been utilized for cyanide treatment longer than any other process, particularly in the metal finishing and mining industries. It is currently the most widely used method (by number of operations) of cyanide treatment employed for mining/milling and metal plating process wastewater treatment. Chapter 2 of the FEIS provides a revised discussion of alternative cyanide treatment methods.

The Kensington Venture evaluated, on a laboratory scale, the three most common chemical processes for reducing the level of cyanide from milling process. These include alkaline chlorination, the Degussa hydrogen peroxide method, and the INCO SO₂ and air process. Both alkaline chlorination and the SO₂/air process resulted in the equivalent treatment effectiveness for cyanide leached pulps (flotation concentrates). Hydrogen peroxide was successful in treating the filtered barren solution (carbon treated to remove gold and silver) but could not be cost-effectively and successfully employed in the treatment of the pulps due to the reported catalyzed decomposition of the hydrogen peroxide reagent.

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There is a discrepancy between the DEIS figure for freeboard to be maintained (5 feet) and that cited by a spokesman for Kensington Venture at a water quality workshop in Juneau on August 9, 1991 ("40 feet of freeboard in addition to probable maximum flood capacity"). The KV official's figure clearly seems high; however, what is the actual figure?

93.14

2-10 What is meant by a "valved decant system" in the discussion of how tailings pond water would be discharged to Lynn Canal? This paragraph erroneously suggests that "undiverted runoff" could somehow be separated from process wastewaters disposed of in the pond.

93.15

How was the drainage area above the impoundment calculated?

93.16

2-11 What assurance is there that bench scale and bulk testing of the ore adequately characterizes its metallurgical variability, for purposes of determining its corrosivity, reactivity, ep toxicity, and for that matter, the likely chemical composition of process wastewater and tailings pond effluent? It is misleading to suggest that the discharge to Lynn Canal will consist only of "excess water accumulated in the tailings impoundment as a result of net precipitation buildup." The discharge will consist of surface runoff, mine drainage, and process wastewater.

93.17

2-22 The fact the "volume of concentrate" to be produced at Kensington "does not warrant consideration by smelters" underscores NWf's point that the need for the gold produced here has not been demonstrated and, indeed, is subject to question.

93.18

2-48 The DEIS rationalizes the choice of underground crushing/grinding on the bases of reduced noise impacts to wildlife. Yet nothing is stated here or elsewhere about possible disadvantages of underground crushing/grinding. Experience at other mines demonstrates it is extremely difficult to prevent water-dependent dust control devices from plugging up with dust and grit or from becoming disconnected. Even with operational controls in use, it can be very difficult to keep ambient dust levels within allowable employee exposure limits. How and where will the air be exhausted? How often will air be exchanged? What

93.19

Because the alkaline chlorination process can result in the discharge of excess free chlorine, most discharge permits require the removal of free chlorine prior to discharge. Dechlorination would be accomplished either by chemical treatment or by natural decay in the tailings pond. Dechlorination is assumed for all FEIS alternatives using alkaline chlorination except Alternative B.

The free chlorine residual in the mill effluent should be relatively low since the oxidation reaction is rapid. Chlorine residual in the open tailings pond would be expected to continue to react and decay. An expected decay rate of a free available chlorine is approximately 0.1 to 0.2 mg/l per sunlight hour. Other processes such as aeration, oxidation and volatilization would also be responsible for eliminating free chlorine in the pond effluent.

The by-products of chlorination have become an increasing concern in the water and wastewater treatment industries where chlorine is extensively used to disinfect raw and treated domestic water sources, or to provide final disinfection to sewage effluent. Based on available information, the potential chlorine reactable organic compound concentration of the Kensington waste material is very low.

93.13

The Sherman Creek tailings facility can be expanded to hold up to 30 million tons (DEIS at page 2-9). Current ore reserve estimates are 10 million tons and could potentially expand to 20 million tons. The site appears to have sufficient expansion potential.

93.14

The minimum freeboard for containment of the probable maximum precipitation event, used to design the tailings storage facility, is 12 feet (Knight & Piesold, 1990). Please see the FEIS for additional discussion of freeboard.

93.15

The system described consists of a decant structure designed to discharge water from the surface of the retention pond. A valved decant is a structure that can be regulated (opened or closed) to hold or release water from the pond depending on need.

The excess water would result from excess precipitation (rainfall minus evaporation) entering the retention pond. The water discharged via the decant system would be a mixture of runoff, process water, mine water and any other waters that enter the pond.

93.16

Five sub-basin areas were used in the peak flow modeling. The Ophir and Ivanhoe Creek drainage, the upper Sherman Creek drainage, the South Fork Sherman Creek drainage, the tailings dam (including the area upstream of the impoundment and between the Upper Sherman and Ophir Creek drainages), and the Lower Sherman Creek drainage. Additional detailed information is available in the planning record. (See Kensington Venture, 1989).

93.17

The Kensington Venture study on ore variability (Kirkham, 1991) describes the Kensington ore body as belonging to a category of mineral deposits known as Mesothermal Gold-Quartz Veins. One characteristic of this mineralization is the lack of zonation of the constituent metals. This lack of zoning typically translates into homogenous ore which does not greatly vary in its trace metal content.

The milling process results in a mixed complex combination of effluents that may vary individually, but together will average to produce uniform water quality. Ore variability is not expected to cause significant modifications in the daily operation of the mill or upon overall process water quality. The concentrate tailings stream is batch treated and monitored prior to discharge into the flotation tailings stream.

Excess tailings pond water is a specifically defined entity. The New Source Performance Standards (NSPS) and EPA Permit Writer's Guidelines define excess tailings pond water generally as the water in a tailings pond that remains after process water is recycled back to the mill. Another definition is the difference between rainfall and evaporation after process recycling. The NSPS accounts for commingled water and allows excess water to be discharged as long as it complies with the State water quality standards. As defined by EPA, excess water is commingled water.

93.18

The referenced statement refers to commercial smelting arrangements, not world-wide economic demand for gold.

93.19

The underground grinding as well as the surface grinding proposals are developed conceptually to assess the environmental impacts of each alternative. All emissions are accounted for. The EIS does not review mechanical design of the ventilation system. MSHA standards will be met or the project will be subject to enforcement actions.

93.20

The silica content of ore and gangue at the project site is extremely low (Richins, 1991). MSHA has specific regulations regarding worker protection from silica dust. Dust control and suppression equipment and respirators may be needed in some work areas. MSHA will regularly inspect the project throughout development and operations to ensure the project meets regulatory compliance.

Factors that will reduce the levels of harmful gasses and particulates, including crystalline silica include:

- a baghouse and dust collection system at the crusher
- water sprays on belt conveyors
- ventilation air through the crusher (30,000 cubic feet per minute)
- ventilation air supplied to the underground mine (400,000 cubic feet per minute)
- natural groundwater flows in the mine tend to keep roadbeds well watered for dust suppression
- routine monitoring of mine gasses by engineering and contractor's personnel
- regular compliance inspections by MSHA
- maintenance of complete monitoring records
- ventilation flows directed so that heavily travelled major accesses to the mine are in fresh air
- maintenance shops and fuel storage areas independently ventilated, with airflows directed to exhaust airways, to isolate the source of potentially dangerous gasses

93.21

The grinding circuit that would be moved underground in the DEIS preferred alternative consists of a totally wet semi-autogenous grinding (SAG) mill and a wet ball mill. Because these operations are both thoroughly wet, particulate emissions from the grinding mill would be negligible. The grinding would be powered by the powerplant on the surface so there would be no additional nitrous oxides or carbon monoxide emissions from the exhaust portal if the grinding circuit were located underground.

93.22

The average annual precipitation for the project region was obtained from weather station at Eldred Rock (elevation 60 ft. MSL) in combination with information from Water Resources Atlas, Forest Service-Region 10 (USDA Forest Service, 1979) that provides means to estimate rainfall at higher elevations using sea level data.

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about fugitive emissions from underground dust-generating sources? Will MSHA standards for employee exposure be met? How?

A related, potentially important issue also receives no attention in the DEIS. How much silica (if any), in particular crystalline silica, is expected to be present in the ore and gangue? If the rock excavated contains any crystalline silica (and the presence of quartz, DEIS at 3-3, indicates this is possible), KV must consider whether it will be feasible to meet the extremely stringent exposure limits for this highly toxic substance in the enclosed environment of the mine and crushing/grinding area. Exposure to respirable crystalline silica causes an irreversible, deteriorating respiratory condition known as silicosis. It also aggravates other respiratory conditions, and its effects can be additive with those of other respiratory irritants.

This raises another question: Tables 4-1 and 4-6 suggest that no additional TSP, NO_x, or CO emissions are expected from the exhaust portal as a result of moving the grinding circuit underground. NWF doubts this is a realistic assumption. In reality, there should be a substantial potential for indoor ambient dust concentrations exceeding permissible exposure levels. How does the Forest Service explain these numbers? In addition, providing adequate ventilation will require considerable engineering. If ventilation needs have not been sufficiently analyzed, power requirements may also have been underestimated. The subjects of indoor air quality and air emissions, particularly particulate emissions, merit considerably more detailed discussion than accorded by the DEIS.

3-2 There is a considerable difference between the measured "average annual precipitation for the project region"--47.87 inches--and the estimated "average annual rainfall at the Kensington Project site"--80 inches. What are the confidence limits on the project site estimate? How can the public be assured this figure has not been padded to accommodate an excess discharge to Lynn Canal? (The applicable EPA regulation limits the volume of the discharge to, essentially, net precipitation on the tailings impoundment watershed.) See also DEIS at 3-8 (describing variability in project site precipitation

93.23

Chapter 3, Surface Water Hydrology, Surface Water Quality in the FEIS includes discussion of these concerns not included in the DEIS.

93.24

Cyanide may be naturally occurring in the environment but is not found normally in detectable quantities in natural streams. According to Hem, "Chemical Characteristics of Natural Water", 1970, "Nitrogen forms certain complex inorganic ions (CN) that are probably not significant in natural systems, but they may enter water supplies through industrial waste disposal". No cyanide has been used at the project site to date, therefore cyanide could not have been introduced into the ground water system. Positive cyanide analyses are believed to result from analytical interference caused by high nitrate concentrations. Inter Mountain Labs, cited in Spannangel (1991), agreed "that it could be possible that the amount of nitrate of 10-40 mg/l could be sufficient to result in some positive cyanide results".

93.25

Additional discussion has been included Chapter 4 of the FEIS and in Kessler and Vigers (1992). The critical factor is not frequency but rather rate of flushing (i.e., receiving water renewal rate). If the rate at which the wastewater constituent is flushed out of Lynn Canal is less than the rate at which it is added, then there will be an increase in the background concentration over time. The conclusion of the extreme worst-case assessment is that flushing is sufficient to limit the projected background increase for all wastewater contaminants to below measurable levels everywhere in Lynn Canal including the suggested eddy re-circulation zone north of Pt. Sherman.

93.26

The 95 percent figure refers to the percentage of the seawater total recoverable fraction that is in solution in the analytical sense, while "standard" was meant to indicate that total recoverable is the fraction that the EPA water quality criteria generally refer to.

93.27

Western paper birch species is not protected under any special authority. No steps to save individual trees are contemplated.

The DEIS erred in describing western paper birch as a State sensitive species. At present, the Alaska Natural Heritage Program has not finalized listing State species. Alaska currently maintains a list only of species proposed for consideration.

Once the State species list has been finalized, Forest Service regulations regarding Plans of Operation will require any such plan to address the impacts to those species and provide appropriate mitigation. Given the rather widespread distribution of western paper birch, it is the opinion of several botanists familiar with this area that this species will not make the final list.

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estimates). The estimated average annual evaporation (17.4 inches) must be accounted for in calculating net precipitation for purposes of limiting the discharge volume.

3-5 See comment for page 4-7 below.

3-11 What is meant by "elevated" concentrations of nitrates in surface and ground waters in the project area? Usually, this term indicates a man-caused condition. If that is its intended meaning here, these concentrations raise at least two concerns: (1) that there is a potential for contamination of groundwater, even in the short term, by activities conducted in the mine and possibly on the surface in the project area; and (2) assuming the nitrate contamination derived from ANFO spills by KV employees or contractors, that KV has a poor record of environmental protection and self-monitoring. If "elevated" is not used in this sense, to what does the Forest Service or KV attribute the "high background" nitrate levels?

Why is it "probable" that the cyanide levels reported for Sherman and Ophir Creek water samples were "false readings"? Cyanide is nearly ubiquitous in the environment. These readings should not be discounted because, if valid, they will be relevant to detecting the occurrence of cyanide contamination of surface waters.

3-17 Water circulation in Lynn Canal is described as "continuous or at least frequent flushing." How significant is the difference between "continuous" and "frequent" flushing with respect to water quality predictions?

3-18 What is meant by the last sentence on this page, continuing to 3-19? "Recoverable metals" is not a "water quality standard" or "criterion" in the technical, regulatory sense. The 95 percent figure is also ambiguous.

3-25 "Lynn Canal supports major commercial fisheries, with salmon being the most notable."

3-36 What steps will be taken during construction to avoid any disturbance to individuals of the sensitive species, western paper birch?

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3-39 The single paragraph describing what is known about deer in this area epitomizes a recurring problem with the wildlife data included in the DEIS. Such data are generally cursory, speculative, and reflective of belated efforts to undertake collection of baseline information. The uncertainty illustrated in the statement, "a small resident [deer] population may occur in the vicinity of Echo Cove on the east side of Berners Bay" (emphasis added), reveals how marginal have been the efforts to document occurrence and habitat use by local wildlife.

3-40 The DEIS discussion of mountain goat studies demonstrates that data are being sought not to aid initial decision making concerning whether the project should proceed and, if so, where facilities should be constructed, but simply to provide some baseline information for use in future monitoring. Yet the DEIS does not explain the underlying purpose of that monitoring nor how monitoring data may be uses in the future.

3-43 Are Montana studies of wolverine the best information available concerning wolverines in this area? Are they even relevant?

3-46 The DEIS's attitude toward threatened/endangered species is excessively casual. In particular, NWF is concerned by the tacit suggestion that this project may go forward in spite of the possibility that Lynn Canal may be "an important area for humpback whale," but in the absence of any "evaluation" of use by the whales.

4-5 The description of Alternative D states that the component unique to this alternative is the tailings pond in Sweeny Creek. But Alternative D also encompasses underground grinding, a feature that logically could affect the emissions from the exhaust portal. Yet the emissions tables for, e.g., Alternatives B and D show no differences in exhaust portal emissions. If emissions are not increasing, what are ambient levels in the underground grinding area? What kinds of dust collection or other control systems are planned and what are their efficiencies? See also comment re: page 2-48 above.

4-7 According to the DEIS there have been 458 quakes since mid-1970 within 200 km of the project site, including 84 registering more than 3.5. The DEIS makes no

93.28

As required by CEQ guidelines, the emphasis of the wildlife sections was placed on species of concern identified during the scoping process. Sitka black-tailed deer were not identified as a species of concern during the scoping process, and information on Sitka black-tailed deer was only provided to indicate that this species does not occur in significant numbers on or near the project area.

93.29

As indicated on DEIS page 3-38, numerous studies have documented mountain goat habitat use in southeast Alaska. This knowledge, in conjunction with a habitat capability model jointly developed by the Forest Service and ADF&G, has been used to delineate mountain goat winter habitat in the vicinity of the project area. Onsite observations of mountain goats and current ADF&G monitoring of mountain goats have generally confirmed this delineation of habitat. Continued monitoring will be used to further validate model projections of habitat use and project related impacts, as indicated on DEIS page 4-49.

Chapter 4 does analyze projected habitat loss and noise displacement impacts based on the proximity of alternative development sites to suitable mountain goat winter habitat.

93.30

The Montana study is one of the most comprehensive completed to date on wolverine habitat utilization and movements. Similar studies have not been conducted in southeast Alaska. Habitats within the Montana study area are similar to those found within the Kensington area, and this study is, therefore, relevant for describing general habitat use by wolverine.

93.31

The evaluation of the entire Lynn Canal as important feeding area would go well beyond the scope required for the EIS analysis of this project. The DEIS approach to threatened and endangered species has not been "excessively casual." As required by Section 7 of the Endangered Species Act, a biological assessment was prepared for the Steller sea lion and the humpback whale and is contained in Appendix H of the DEIS. The National Marine Fisheries Service, in their review of the DEIS, suggested only minor revisions to the Biological Assessment (see comment letter No. 86). The Biological Assessment was revised based on these suggestions and is contained as Appendix B in the FEIS.

93.32

Please see response no. 93.21.

93.28

93.29

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93.32

93.33

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predictions regarding probability of number or intensity of earthquakes in the project area during the life of the mine. Is the CBJ code criterion (6.5) for earthquake risk (as was followed in the case of the A-J mine) applicable to this facility? If so, is it an appropriate standard for a potentially hazardous facility such as a tailings impoundment?

It appears from the DEIS that the tailings dam would be designed to withstand a 7.0 quake, but this seems an inadequate safety margin for a potentially hazardous facility in light of this area's seismic risk. The mill facility is located only 70 miles from the Fairweather fault, the most active fault zone in North America. Earthquakes up to 8.6 on the Richter Scale have occurred within this fault zone. In fact, four earthquakes registering 8 or greater, and 26 quakes measuring 6 or greater, have occurred within the past approximately 100 years in this region. (NGPC (1990) data, cited in comments of the Sockeye Society (dated Feb. 28, 1991) on Geddes Resources Ltd.'s "Revised Mine Plan: Stage I Environmental and Socioeconomic Impact Assessment" for the proposed Windy Craggy Mine in British Columbia). The Denali fault, also in this general area, is also capable of producing a seismic event of approximately 8.

Moreover, the DEIS discusses only a worst case event: it does not discuss the likely effects on the tailings impoundment of a seismic event of some lesser magnitude. What may be the long-term risk to ground or surface waters, for instance, from small fractures in the dam, or seismically enhanced seepage through the dam or bottom of the impoundment?

4-15 The DEIS states that a 120:1 dilution is needed to reduce lead levels in the discharge to the acute toxicity criterion, but the Fact Sheet accompanying the draft NPDES permit states that the available dilution is 100, and the DEIS at 4-26 references a "minimum dilution of 85 ... to required to achieve ambient water quality criteria." Can these discrepancies be explained? Also how will the lead concentration be further reduced to the chronic toxicity criterion, or to the water quality standard if that is a still lower number?

4-18 In the statement "sediment pond water would be treated and discharged," does the Forest Service mean that

93.33

The DEIS included a deterministic evaluation based on empirical seismic parameters including the absence of mapped active faults in the area, seismic activity within a 200 km radius of the project site, proximity to known active faults and tectonic zones (i.e., Fairweather and Denali faults) and the evaluation of random or "floating" earthquake sources.

Extensive empirical seismic data collected worldwide has provided reliable comparisons between earthquake energy (magnitude, acceleration, period, etc.) and distance. Earthquake attenuation curves developed for both bedrock and soil conditions (Seed and Idriss, 1982) indicate significant attenuation of earthquake energy from the zone of energy release or epicenter over distance. Therefore, the bedrock acceleration for large earthquakes which have occurred on existing fault systems (Fairweather, Denali, Queen Charlotte) significantly attenuate over distance. A comparison of earthquake accelerations for the Kensington project indicate the floating earthquake located 15 km. from the site will result in the greatest potential acceleration.

93.34

There should be no effect on the dam from seismic events smaller than the design earthquake.

93.35

Chapter 4, Surface Water Hydrology, Mill and Tailings Effluent Characteristics of the FEIS, has been revised to address this concern.

93.36

We are unable to locate the passage you quote from DEIS page 4-18 so we cannot specifically respond to the question. Please note, however, that the treatment proposed for the Kensington project effluent is discussed in FEIS Chapters 2 and 4.

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such water would undergo some form of treatment in addition to settling in the tailings pond, or settling alone, prior to discharge?

4-19 NWF is concerned about the plan to reroute Sherman and Ophir Creeks back through the tailings pond after mine closure. (Although we note that at page 4-39 the DEIS states that Ophir Creek would remain in its diversion channel.) At worst, this could result in the slow leaching and resuspension and transport downstream of toxic sediments that the tailings pond had initially removed (via the settling process) from process and mine wastewaters. This process might continue indefinitely--a steady, if slow, trickle of toxics into Lynn Canal. At best, we simply can't predict what would happen to the 30 million tons (or more) of waste rock, including heavy metals, deposited in the tailings pond. The plan seems illogical, to say the least.

The reference to a 5:1 dilution ratio needed to reduce toxic concentrations (copper, specifically) to acute criteria levels in the event of a "worst case" spill is drastically different than the 120:1 ratio cited for lead on p. 4-15. How can this discrepancy be reconciled?

We are also disturbed by the suggestion that there will be little or no reclamation of the tailings pond and new stream channels after mine closure (see, e.g., references to headcutting, erosion, increased sedimentation, etc.). The project should not proceed until there are guarantees that reclamation will take place and that there will be continuing monitoring (indefinitely, if necessary) to ensure its effectiveness.

4-21 NWF is mystified by the DEIS conclusion that Kensington and the Jualin mine, if developed, would have no cumulative impacts on water quality. The close proximity of these projects, the likelihood that Jualin would also require a tailings pond and would request a mixing zone, and that it might directly impact streams or other surface waters guarantee that there will be cumulative impacts. The DEIS writers may assume that impact zones need to overlap geographically to be cumulative. This is certainly not the case. Mixing zones are a good example of the folly of such an interpretation of "cumulative." Mixing zones are required by state law to be as small as practicable.

93.37

The referenced statement about Ophir Creek remaining in the diversion channel was incorrect in the DEIS and has been changed in the FEIS. The reclaimed stream channels would be designed to minimize the possibility of re-suspending sediments from the tailings pond (see response no. 86.8). Leachability tests indicate that the rock is not susceptible to high rates of leaching.

93.38

The accidental spills section of Chapter 4 has been re-written. Dilution calculations have been removed from the discussion because they obscure the issue; if the tailings pond effluent line breaks and discharges to area streams, acute toxic concentrations could be expected in some portion of the stream.

93.39

Please see response no. 7.5.

93.40

There is only one operating mine, Greens Creek, near Juneau at this time. All other projects (except the AJ Project and possibly Jualin Project) are in the early development stages and are not expected to be developed during the life of the Kensington operation. For more information on other exploration projects in the area please see pages 1-4, 1-5 and Appendix B of the DEIS. When looking for other reasonably foreseeable future actions the ID Team did not restrict itself to mineral development. Your letter does not identify any other reasonably foreseeable developments that have not been accounted for in the EIS.

The mixing zone(s) would be at least 10 or more miles apart in the aquatic environment. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7). Since these zones will undoubtedly be small, as required by 18 AAC 70.032(d), we find that although they would be additive, they would not be expected to constitute significant cumulative impairment of the aquatic habitat in Lynn Canal.

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18 AAC 70.032(d). The presence of more than one mixing zone in a relatively small area (Kensington's and Jualin's portals are only two miles apart), whether they overlap or not, increases the volume of aquatic habitat significantly impacted by pollution. Each mixing zone further reduces the availability of unimpaired habitat. These impacts are "incremental," see 40 CFR § 1508.7, thus unquestionably "cumulative." This faulty conclusion about cumulative surface water quality impacts indicates that all discussions of cumulative impacts in the DEIS may need to be revisited.

Cumulative impacts should be considered with respect to the type of impact (e.g., air quality, water quality, solid waste generation, habitat loss, etc.) and all other existing or reasonably foreseeable facilities that have or may have additive effects. The CEQ regulations define cumulative impact as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." 40 CFR § 1508.7 (emphasis added). There is no justification for limiting the scope of consideration to mines, let alone only one or two other mines. See, e.g., the document "Mines Located in the Juneau Area," prepared by Alaska Department of Environmental Conservation and included in a letter dated Feb. 22, 1989, from Dennis Kelso to Representative Fran Ulmer. That report lists six mines in addition to A-J, "in the Juneau area," and ten other mines and mining locations in southeast Alaska and nearby British Columbia.

4-22 NWF seriously questions whether sufficient samples were tested to adequately determine the acid-generating potential of mine drainage. The wide range in sulfate concentration in the few samples analyzed and the absence of data (in the DEIS, at least) explaining the relatively consistent pH values suggest that additional samples should be examined. The same is true of the need for testing the metals composition of mine drainage. Will the post-mining discharge require an NPDES permit? If not, what agency will be responsible for ensuring that water quality standards are met? Will the discharge be routed through

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The acid-generating potential for several waste rock, ore, and tailings samples were analyzed. Column leach tests conducted on ore samples indicated a low acid generation potential.

According to documented instances of acidification of mine spoil materials, acidification is a very rapid process with most of the oxidation occurring within a few months exposure of the materials to the atmosphere. The lack of any evidence of acidification in either fresh or 60 year old ore and waste rock samples analyzed (see DEIS Appendix Table D4) indicates that acidification is not occurring and that additional sampling would be unnecessary. The consistency of the pH values of waste rock, ore, and tailings samples are discussed in the *Soils Technical Report for the Kensington Venture Gold Mine Project* (IME, 1991a, as cited in the FEIS).

Additional evidence that indicates an absence of acid-generating materials was obtained from the settling ponds (Station 101) immediately below the lower mine adit and other surface water sampling sites (Stations 109 and 107) on Sherman Creek below the area of mine waste rock ore. Water quality data from these stations, which have been monitored since 1988, contain no evidence of acid mine drainage from existing mine and exploration disturbance sites (see DEIS Appendix Table D2-3). The pH values measured for Ophir Creek (DEIS Appendix Table D2-4) and Sweeny Creek (DEIS Appendix Table D2-5) drainages, in which no mine disturbance has occurred, are virtually identical to those obtained for Sherman Creek. Finally, monitoring of mine water discharge from the upper and lower adits (DEIS Appendix Tables D2-7 and D2-8) has shown no change in pH, indicating that little oxidation of the reactive sulfur in mine rock materials is occurring.

Metals composition in mine drainage are described by two monitoring stations; #101, settling ponds measuring flow from the 800 foot level adit and #108, the 2000 foot level adit.

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Under current regulation the NPDES Permit would be vacated after mine closure provided EPA is satisfied that applicable water quality criteria are met. Post mining mine water discharge would be routed to the surface water system via Ophir Creek. The Kensington Venture would be held responsible until reclamation monitoring demonstrates the water quality standards are being met.

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Mining plans for the Jualin Mine are not available and, therefore, it is difficult to address the cumulative impacts. If the underground workings of the Jualin and Kensington mines would come within one mile or less of each other there would be a potential for zones of influence (from the drainage of the respective mines) to converge and cumulative impacts to occur. The distance of one mile required for convergence of the zones of influence from the Kensington and Jualin mines was calculated using the Sichard equation (Maximov, 1975).

93.44

EPA ocean discharge criteria cannot be considered irrelevant to the discharge water quality and mixing zone issue because one definition of mixing zone is found in these regulations. These regulations are the regulatory basis for considering a mixing zone at the Kensington Project.

93.45

Refer to Chapter 4 of the FEIS for a discussion of this issue and to Kessler and Vigers (1992) for the supporting technical discussion. Worst case dilution requirements were used throughout the calculations in part by assuming no pre-dilution from tailings pond runoff or other freshwater sources. This is equivalent to assuming that wintertime discharge volume would further reduce Any seasonal changes in wastewater discharge volume would further reduce the predicted end-of-pipe wastewater constituent concentrations. Since different factors in the initial mixing process become limiting at different times of the year, no similar single worst case approach could be used to simplify prediction of achieved dilution, so the seasonal range of relevant conditions was evaluated in detail. In the winter/spring, when water column stratification is at its lowest, trapping depth of the buoyant discharge plume is the limiting factor while in the summer/fall, when stratification is high, achieved dilution is the limiting factor. This seasonal analysis shows that when dilution is limiting, dilution achieved at the edge of the initial mixing zone remains sufficient to reduce all wastewater constituent concentrations to below State and federal ambient standards, while when trapping depth is limiting, the discharge plume is predicted to remain below the near-surface (i.e., < 20 m) waters of the water column.

93.46

The absence of a discussion on wastewater total suspended solids impact was an oversight in the DEIS which has been corrected in the FEIS (see Chapter 4).

93.47

The NSPS for TSS are "in-the-pipe" standards, and effluent at the point of entry into Lynn Canal would be not be allowed to exceed those limitations. As described in the FEIS, dilution would occur very rapidly. Within 15 meters from the pipe, all receiving water standards would be met. See FEIS Chapter 4.

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the tailings pond and existing outfall? Will it be monitored? By whom? Problems resulting from mine drainage in other locations have demonstrated that some entity should be responsible for continuously monitoring the discharge from the Kensington mine.

4-25 See also comment for page 4-21 above. We question the "no cumulative impact" conclusion with respect to groundwater. If there is a potential for pollution of the groundwater by each mine, and such potential surely exists, there is accordingly a potential for cumulative impacts. Furthermore, the statement that "the only potential" for cumulative impacts would occur if underground workings came within one mile of each other (whereas Kensington and Jualin are two miles apart) smacks of arbitrariness.

4-26 EPA's ocean discharge criteria are irrelevant to the KV Project's proposed discharge. The reference to them here only confuses the mixing zone issue. See also comment at page 4-15 above concerning dilution ratios.

4-27 Will the expected reduction in the volume of the tailings pond discharge (presumably resulting in increased concentrations of pollutants) during the winter combine with reduced mixing/flushing in Lynn Canal to exacerbate the water quality impacts? Have these factors been considered in the aggregate in mixing zone calculations?

4-28 NWF raised this point in its separate water quality comments, but it bears repeating here: The fact that TSS could not be predicted is a source of considerable concern. This casts doubt on all predictions of tailings and tailings pond effluent quality, and thus on water quality permitting decisions. How can metals concentrations be projected if there is no certainty what TSS levels will be? How can the company or the regulatory agencies determine what treatment will be necessary or whether treatment will be adequate to meet water quality standards? These questions must be answered before the DEIS is finalized and before water quality permitting proceeds.

4-29 On what do the DEIS writers base their conclusion that "No deleterious effects to the marine environment are expected" if the NSPS standards for TSS (20 mg/l and 30 mg/l) are achieved? This conclusion seems directly at odds with the information that larval herring feeding rates were

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affected by exposure to 20 mg/l of suspended silt. Also, what is the Alaska standard for TSS?

How are DEIS readers expected to interpret the information in Table 4-11, which reports effluent concentrations in terms of total recoverable metals and ambient criteria in total dissolved levels?

4-31 How do "location and operation of the diffuser" render the potential for bioaccumulation of metals "negligible"? Concluding statements such as this are of no use in judging the analysis of impacts. Also, assessing the potential biological impact of metals from KV's operations as "significantly less" than the "severe case of heavy metal effects" at Skagway is hardly reassuring. Even under "worst case" conditions, however, that term is defined, KV's operations must at all times comply with water quality standards. Both the uses portion of Alaska's standards and the numeric aspect (0.01 times the LC50 value for sensitive species), if enforced, will ensure that what happened at Skagway will not happen here. The implication here that effects could occur but would be less severe than at Skagway is unacceptable.

4-32 Has the concern over the potential for biomagnification diminished in the short time since the A-J Mine DEIS was prepared, or is it simply that the interpretation of the available literature on the subject differs between the two DEIS's? The Kensington EIS states flatly that "very few studies have shown that the process [biomagnification] occurs with heavy metals." The A-J Mine DEIS's conclusion is less broad. It states that there is little evidence of biomagnification of metals in marine waters. Which conclusion is correct? NWG believes a more thorough assessment of this very important topic is warranted.

Have the additive effects of copper and zinc been considered in determining what water quality standards should apply to this facility? What about the additive or synergistic effects of other (or all) metals in the proposed discharge? Alaska water quality standards require such consideration.

The discussion of potential impacts to fisheries overlooks the impact on market demand for salmon caught

The State of Alaska has no specified standard for TSS. It does have a standard for turbidity, which is not directly comparable to TSS. The EPA regulates TSS for projects like the one being proposed through the NPDES permitting process. The NPDES new source performance standards for TSS are 30 mg/l daily maximum and 20 mg/l monthly average. See Appendix D.

93.48

Pages 3-18 and 3-19 of the DEIS clarify this matter: Dissolved metal concentrations in seawater typical of the open waters of Lynn Canal are within 95 percent of total recoverable metal levels, which are used for setting water quality standards. This difference is negligible at the concentrations being projected. The table footnotes point out this minor difference to assure technical completeness.

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a) The sentence being referred to reads in its entirety: "The potential for heavy metal bioaccumulation within organisms in the intertidal community near the proposed project is expected to be negligible given the location and operation of the diffuser."

This statement refers to the negligible potential that any material in the effluent would enter the intertidal zone due to depth of the discharge and plume behavior given oceanographic conditions. This matter was discussed in some detail in the DEIS, and is expanded upon in the FEIS (see Chapter 4). Kessler and Vigers (1992) recently issued a detailed report describing the likely extent of deposition in the project area and the potential for bioaccumulation. The important point related to this comment is that the intertidal community will not be affected by the effluent.

b) The discussion of Skagway Harbor is intended to demonstrate two points. First, bioaccumulation was not detectable in mobile animals at Skagway, a severe case of heavy metal deposition, indicating that the potential at Kensington would be negligible for similar types of organisms. Second, worst case impacts to sedentary animals like polychaetes in the immediate vicinity of the Kensington outfall would be significantly less than those observed at Skagway. This second point is expanded upon in the FEIS to clarify the expected extent of impact to non-mobile animals (see FEIS Chapter 4).

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Interpretations of literature are essentially the same in the two draft documents. The reader is correct in that the AJ document is less broad, but it is still consistent with statements in the Kensington DEIS. A recent report by Kessler and Vigers (1992) on the potential for biomagnification due to the Kensington project also concluded that risks due to this process would be minimal and virtually non-existent.

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The determination of water quality standards is outside the scope of the EIS. Standards to be applied to the proposed facility are established through the NPDES permitting process. Typically, that process utilizes water quality criteria for metals without considering additive or synergistic effects per se. Provisions of the permit would require bioassay tests to determine toxicity of the actual effluent. Procedures used for determining water quality criteria (EPA, 1986) provide for various safety margins; these are expected to offset any additive effects of various constituents that occur together in an effluent.

Consideration was given to additive effects of various metals in the EIS

analysis. It is known that the toxicities of some metals are additive at certain concentrations, as can occur when copper and zinc occur together (see, for example, Sprague and Ramsay 1965).

By adding the toxicities of those metals whose concentrations are projected to be above detection limits in the Kensington effluent, the estimated combined toxicity would be less than the marine chronic water quality criterion within 20 meters of the outfall (at an outfall depth of 100 meters).

The toxicities of cyanide and metals are not simply additive due primarily to the formation of metalocyanides with some metals. Iron cyanides, for example, are expected to comprise a significant amount of the total cyanide in the discharge, yet this substance is both relatively stable and of low toxicity (Doudoroff 1976). Iron cyanides discharged at a relatively deep depth, as proposed for Lynn Canal, would not be expected to undergo any photodegradation, which can cause a release of free cyanide. When considering these types of metal cyanide interactions, it is very likely that the result would be less than additive in the case of the Kensington discharge.

The presence of several metals in the discharge will likely also affect the potential for bioaccumulation. Mance (1987) reported that the majority of existing studies indicates that interactions between metals tend to reduce rather than increase the uptake of metals by organisms.

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Please see response no. 93.12.

93.53

Please see response no. 83.1.

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from this area that knowledge of the toxic discharges into Lynn Canal may have on consumers. The demand for "wild salmon" could be drastically affected if consumers lose confidence in the quality of the fish. This point was raised at the August 9 public hearing in Juneau and must be addressed by the responsible agencies. Thus, the DEIS's conclusion, "No impacts are expected to the fisheries," is unwarranted at this time.

The disadvantages of increasing the use of chlorine to destroy cyanide--i.e., the potential adverse side effects of increased chlorine in the effluent--should be addressed.

4-33 The recent oil spill at the Kensington mine is cause for concern and warrants some explanation. In addition, it establishes a need for some discussion in the DEIS of the KV companies' environmental records.

4-37 NWF is seriously concerned about the potential for drastic effects on aquatic life in the event of certain spill events, such as a release of the contents of one bin of sodium cyanide or a rupture of the tailings discharge pipeline and release into Sherman Creek. Either of these events could easily occur. There is little or no discussion in the DEIS of their likelihood or what steps would be taken to reduce the probabilities.

4-38 What effect on the tailings pond's ability to accommodate flood waters from the portion of the watershed contributing to the pond would the diversion of "flows in excess of the 25-year flood event" from the upper Sherman Creek drainage have? Such diversion must not impair the ability of the facility to comply with 40 CFR § 440.104(b)(2), -.131(b).

4-40 See comments for page 4-21 above concerning cumulative effects. The DEIS minimizes the significance of potential cumulative effects by the use of two ploys: (1) comparing cumulative impacts to anadromous Dolly Varden to the more significant impacts to resident fish (all of which will die due to stream dewatering), and (2) considering only population impacts, and not habitat impacts. Any discussion of cumulative impacts on freshwater resources must encompass impacts to habitat. The DEIS should consider that both the A-J mine and now Kensington propose

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Please see the discussion on material spills on pages 4-17 to 4-18, 4-19, 4-21 (2 places), 4-33, 4-37 and 4-72 in the DEIS. This discussion has been carried over to the FEIS.

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The referenced CFR citation requires that the impoundment be "designed, constructed and maintained to contain the maximum volume of wastewater which would be generated by the facility during a 24-hour period without an increase in volume of wastewater resulting from a 10-year, 24-hour precipitation event". The tailings impoundment was designed for the PMF from the undiverted drainage area and the volume in excess of the 25-year, 24-hour event on the Upper Sherman Creek drainage up to, and including the PMF. These design flows are substantially greater than required in the CFR.

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A discussion of the cumulative impact from these projects to freshwater fish habitat and associated populations has been added to the FEIS (see Chapter 4).

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Please see response no. 92.28.

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Tables 4-16 and 4-17 (DEIS page 4-43) summarize acres of wetlands lost and relative importance of wetlands lost by each alternative. The purpose of the board-feet of timber lost estimates for each alternative has no direct bearing on the assessment of wetland impacts and has apparently led to confusion.

The references describing the methodologies and adequacy of the wetland ranking system are provided on DEIS page 3-34 and 3-36. The results of the functional analysis by plant association are found in DEIS Appendix Table D4-11. These items are explained in more detail in the *Jurisdictional Wetland Determination for the Kensington Venture Gold Mine Project* (IME, 1991b, as cited in the FEIS). This is the most site-specific ranking system available for this area and is recommended by the Corps of Engineers and EPA for evaluating wetlands impacts. Since wetland functional values cannot be strictly defined in terms of acreage, the Wetland Importance Value was assigned to give small wetland areas with higher functional values more importance in the evaluation process.

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to destroy freshwater stream habitat and the Dolly Varden populations resident therein. The Juallin Mine is likely to be developed and would probably similarly impact another stream. Similar impacts may be expected for other (perhaps all) reasonably foreseeable mine projects in the region. These incremental (cumulative) impacts must be considered.

4-42 What kind of protection, if any, is afforded to "threatened and endangered" plant species, if it is allowable to "destroy" "approximately six populations" of one such species? Indeed, what purpose is served by identifying the occurrence of individuals of such species other than to document their imminent demise? What is the significance of the loss of "approximately six populations" of western paper birch? NWF disapproves the DEIS's cavalier approach to this subject.

4-43 The DEIS limits the discussion of wetlands impacts to a ranking of wetlands values in the project area and an outline of federal policy concerning wetlands mitigation, followed by one paragraph of lost acres/board feet figures per each alternative. The reader has no way to judge the adequacy of the ranking system or its application in this case, nor can the reader assess how or whether the system will bear on mitigation requirements. Postponing the development of mitigation measures to the final reclamation plan precludes public comment, and further limits the information available to decision makers now, before resources have been perhaps irretrievably committed. Although Forest Service regulations require that the operator post a bond to cover reclamation costs, without a more thorough discussion of reclamation needs, feasibility, etc., there is little of substance concerning wetlands on which to comment at this stage of planning.

4-44 Why is the estimate of cumulative effects limited to consideration of Kensington and possible future "projects"? What about existing developments in the region? Again, the DEIS's approach to this inquiry is misguided.

4-46 The discussion of wildlife impacts raises a number of concerns, especially with regard to mountain goats, but contains too little explanation of the analytical methods to enable informed comments. In particular, better explanation of HSI values and a discussion of how to interpret impact predictions are needed. Do the reduction

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factors cited (0.5, 0.3, etc.) correspond to percentages? If not, what does a reduction of, for example, 0.5 mean without reference to the pre-impact HSI value? On what basis were the disturbance zone radii selected? Do HSI values reflect only the habitat use impact resulting from noise disturbance? If so, was there any effort to evaluate the overall effect of direct habitat loss (loss of food, cover, denning sites, etc.) as well as indirect impacts on habitat or habitat use? Has the Alaska Department of Fish approved this application of the HSI system?

4-48 The DEIS essentially admits that impacts on mountain goats cannot be predicted because there were few baseline data, and because data that did exist are not being borne out by initial field studies. According to the DEIS field studies began in 1990, but a KV spokesman at the August 9 workshop in Juneau stated that the summer of 1991 was the first season of a 3-year study. When asked what is the purpose of studying mountain goats, given that no data would be available for decision-making purposes, the official answered "for monitoring." WWF now asks the Forest Service the same question. Is this just another sacrifice area, where studies are initiated at the time of, or shortly before, the onset of development activities, and the effects of construction and operation on wildlife are simply documented? Ostensibly such studies are intended in part to produce data that may be used to aid in predictions of impacts of future project proposals. But in reality, they are seldom applicable to later projects (or project proponents argue they are irrelevant), or there are no baseline data for the new area upon which to base predictions. Indeed, these studies are often useless even for purposes of documenting impacts at the site where they are conducted, because sketchy baseline data do not allow comparisons or conclusions. Furthermore, DEIS readers have no way of knowing what sort of studies is planned and thus what information would be obtained thereby.

Mountain goats will be one of the casualties of the A-J mine development and it appears they will be impacted similarly by the KV project. According to area biologist John Palmes, Alaska Department of Fish & Game, mountain goats are much more apt to become increasingly sensitive to noise than to "habitate" to it. Construction activities are likely to cause range abandonment. See Letter to James M. Montgomery Consulting Engineers, Feb. 19, 1991 (in BLM's

As summarized on DEIS page 4-43, the mitigation process includes several types of actions. In this evaluation, potential jurisdictional wetlands were identified so the proposed impacts with each alternative could be avoided or minimized. The DEIS indicates that mitigation in the form of restoration or replacement would be required as part of the final reclamation plan.

Necessarily, this plan cannot be prepared until a preferred alternative is selected and the Record of Decision is signed. The final determination of the extent of wetland mitigation required falls under the provisions of Section 404 of the Clean Water Act as administered by the U.S. Army Corps of Engineers. The Memorandum of Agreement between the EPA and the Corps of Engineers concerning the determination of mitigation under the Clean Water Act, Section 404 is consistent with the President's goal of no overall net loss of wetlands. However, for clarification, the Corps of Engineers does not have "no net loss" procedures. If mitigation is found to be practicable, appropriate, and warranted, the Corps would require mitigation for wetland losses.

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Cumulative effects estimates were not limited to considerations of future impacts only. The discussion of cumulative effects centers on future developments since past effects are already documented in the baseline data collection.

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HSI values are based on the ability of a particular habitat to provide the known life history requirements of a given species. As indicated on Figures 3-23 and 3-24 in the DEIS (pages 3-39 and 3-41), HSI values can range from 0 to 1, with 1 representing habitat of highest value and 0 representing habitat of no value for a given species. The reduction factors of 0.5 and 0.3 for mountain goat and 0.4 and 0.2 for black bear represent the percentage of total HSI value (0-1) which were subtracted from existing condition HSI values to project impacts associated with noise. The disturbance zone radii and reduction factors were projected based on a coordinated Forest Service and ADF&G biologist review of existing literature and HSI model information related to disturbance distances.

Table 4-19 in the DEIS (pg 4-48) shows total available habitat and habitat capability (in terms of number of animals) for mountain goat and black bear prior to and after the effects of noise are evaluated for each action alternative. Table 4-18 shows the amount of habitat lost to direct habitat disturbance for Management Indicator Species.

The HSI models were developed jointly between Forest Service and ADF&G biologists and represent the current "state-of-the-art" in our predictive modeling capabilities.

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A-J Mine files). According to Palmes, the evidence on this issue is not "inconclusive" as it was characterized in the A-J Mine DEIS. The Kensington DEIS cannot disguise the extent of impacts on goats and other species by its lip service to field studies, validating model predictions, and future monitoring. See also Appendix A, Part D. NWF object to allowing project development to proceed absent adequate baseline information and reliable estimates of effects. We object even more strenuously to the notion that development may proceed in the face of unknown but probable impacts as long as someone will be documenting them for posterity. This is counter to the purpose of an EIS.

The estimates of lost black bear and mountain goat habitat are quite substantial, yet the DEIS makes no qualitative judgment about these impacts. How are decision makers to evaluate these figures or weigh them along with other impacts against purported project benefits? (The same comment/question could be raised with respect to nearly every impact described in the DEIS.) And what attempt will be made to mitigate impacts on these species?

4-52 How will KV assure that process variations or fluctuations in mill operating conditions will not result in cyanide levels that pose a risk to birds and other wildlife that use the tailings pond? Cf. the experiences of gold mines/mills in other parts of the country, e.g., Echo Bay operation in Nevada.

NWF is concerned that noise impacts to wildlife (from mine and mill operation, helicopter and barge traffic, etc.) have not been adequately assessed.

4-55 Impacts on recreation are understated. It cannot be doubted that there will be increased demand for recreation opportunities as a result of the Kensington-related population increase in the Juneau-Haines area. The DEIS does not adequately examine the likelihood that recreational use of the general project site area will increase due to Kensington employees combining weekend recreational activities with their regular work schedules.

NWF disputes the assumption on this page that resident hunting and fishing pressure would likely increase in proportion to the project-induced population increase.

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The DEIS states on page 4-45 that predictions of impacts to wildlife are difficult to make since accurate information on wildlife population numbers is often impossible to obtain. Even if accurate population estimates are obtainable, observations of changes in populations may not necessarily be attributable to disturbance factors since other factors such as habitat and range conditions, nutritional value of available food, weather, disease, and natural cyclical population variations may also have an effect. Because of the inherent problems associated with impact projections from inferred or observed population changes, the Forest Service has utilized a habitat approach to impact assessment. The habitat preferences of mountain goats in southeast Alaska have been well documented (see Fox et al., 1983).

Initial habitat utilization studies for mountain goat were initiated in the spring of 1990. ADF&G's 3-year radio-collar monitoring study was started in the fall of 1990.

The Forest Service does not consider the project site another "sacrifice" area. The effect of mine development on mountain goats is one of the principal wildlife concerns associated with the Kensington Project.

Since this type of development has never been studied in proximity to a mountain goat population in southeast Alaska habitats, the results of the monitoring will be used to validate the modeled predictions of habitat utilization and projected impacts. The ADF&G studies will have collected over a year's worth of monitoring data (including two winter seasons) prior to mine development. In addition to the ongoing ADF&G studies, the Forest Service has initiated onsite monitoring of mountain goat responses to mineral exploration and other activities at the Kensington and the Jualin sites. Results of the ADF&G and Forest Service studies will be used to refine impact projections and determine appropriate mitigation measures, as necessary. The results of these studies will be applicable to future proposed developments in mountain goat habitat in southeast Alaska.

The DEIS does indicate that displacement and possible reduction of the mountain goat population is expected with project development (see pg 4-49). Mountain goats have been shown to be sensitive to different types of development activities, although some studies have also indicated that some habituation to human activity may occur over time (see pg 4-49). The Forest Service believes that the habitat approach used for impact assessment in the DEIS and current monitoring studies are the best current means for assessing mountain goat impacts. Since the effects of mine development on mountain goats in southeast Alaska has never been studied previously, CEQ regulations (1502.22) clearly allow for reasonable scientific projections of impacts where existing pertinent information is unobtainable.

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The EIS identifies environmental changes in kind (losses, reductions, impairments, enhancements, etc.) and further identifies changes in quantity to the extent possible. In accordance with CEQ regulation (40 CFR 1505.2) the Forest Service in the Record of Decision will identify and discuss the factors used in making its decision for the preferred alternative.

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The Kensington Venture proposes using alkaline chlorination on a batch basis for cyanide destruction; therefore, regardless of the fluctuations in mill operating conditions leach tails will not be released until neutralized to acceptable cyanide levels. Additionally, the flotation circuit at Kensington operates at a neutral pH. An elevated pH will strip oil from the feathers of birds causing them to drown. With the neutral pH there should be no effect on birds using the tailings dam.

Through the batch cyanide destruction process the Kensington Venture would reduce cyanide levels to 1 mg/l or less prior to mixing the leach tailings with the flotation tailings. This remixing of the tailings will dilute the cyanide level of effluent discharged to the pond (i.e., only 4 to 7 percent of the 4000 tons per day processed is treated with cyanide in the CIL process). Additional dilution will be provided by mine drainage and precipitation.

The end result will be a cyanide concentration in the tailings pond below a level that would pose a risk to birds or wildlife.

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Noise sources associated with each alternative have been modeled and projected to receptor sites in known habitat for potentially sensitive wildlife species (mountain goat, black bear). These noise projections were used, in part, to determine disturbance radii utilized for assessing noise impacts and reductions in habitat quality for mountain goat and black bear (see DEIS page 4-47). Additional discussion of noise impacts related to helicopter transport has been added to the FEIS. The FEIS conclusions incorporate information obtained from field studies of mountain goat behavior conducted by the Forest Service in 1991. Those studies monitored mountain goat behavior during periods of helicopter supported drilling activity and other mining activity at both the Jualin and Kensington sites.

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The DEIS at page 4-55 acknowledges that there will likely be an increase in hunting and sport fishing near the project area. No recreational use of the site is documented; therefore, this is not a significant impact to existing recreational users.

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It is likely that a greater percentage of mine workers engage in hunting activities than do current residents of Juneau considered collectively. Furthermore, the discussion of hunting pressure overlooks the fact that, not only will there be more hunters, but there will be less habitat supporting huntable populations as a direct and indirect result of this development.

The DEIS also does not adequately portray the importance of Berners Bay as a recreational use area, nor the potential impacts of each alternative on users of that area (e.g., helicopter and barge noise impacts, possible mill operation noise impacts, possible crowding effects, diminishment of the current semi-primitive recreational experience, etc.) Berners Bay is unique in the Juneau area in that it can be accessed by four-wheel drive vehicle from Juneau. This is an additional factor that makes it deserving of protection.

4-70 The socioeconomic impacts of the Kensington project on the Juneau and Haines communities will be highly significant. The DEIS's treatment of this subject does not do it justice. Housing-related impacts and effects on the crime rate may be among the most serious. Yet the DEIS does not address the cost or affordability of new housing, the availability of new housing building space, the effects on temporary housing facilities (such as motels), or myriad other aspects of this topic. Nor does the DEIS discuss the correlation documented in other areas of increases in certain crimes and juvenile delinquency with the opening of new mines or oil/gas development projects. These effects are also seen during the construction phase of large development projects if one community bears the brunt of the project's impact. The DEIS also improperly limits the discussion of cumulative socioeconomic effects to the Kensington and A-J Mines. Other possible mines, particularly the Jualin, as well as non-mine developments should have been considered. This entire subsection of the DEIS should be expanded.

Appendix A, Part C

The "conceptual" reclamation plan raises more questions than it provides answers. For example: Who will be responsible to see that reclamation is successfully accomplished at the KV site? How long after mine closure

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There is no evidence to suggest that a greater percentage of mine workers are likely to engage in hunting activities than do current Juneau residents. The ADF&G's *Strategic Plan for Management of Deer in southeast Alaska 1991 - 1995* (ADF&G) assumes that hunting demand will increase in proportion to population growth. Loss of habitat in Game Management Unit 1C from project development represents an extremely small percentage of the Unit that receives only minor hunting use due to the remote nature of the site. As a result, any direct loss of habitat within Unit 1C would have a negligible effect on available hunting habitat.

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For a discussion of recreational use of Berners Bay please see the discussion in Chapter 3 (DEIS at 3-46 to 3-50). The impacts to Berners Bay are discussed in proportion to the level of impact expected. Except for Alternative C, no activity is anticipated in Berners Bay that would interfere with use of the area by four wheelers.

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Page 4-66 of the DEIS presents the conclusions of the housing analysis in summary form. A more detailed analysis has been included in Chapter 4 of the FEIS.

The five percent increase in population estimated to accompany the opening of the Kensington mine is not expected to have a significant impact on the crime rate in the Juneau area. During the construction phase, a maximum population increase of 4 percent is projected. Because of the remote camp-style operations during this phase, the impacts in Juneau would be minimal and somewhat less than the percentage increase in total population. The Greens Creek mine construction effort was conducted similarly and no correlation in increased crime was observed by the JPD officials. (The McDowell Group, 1990b) A permanent workforce will be employed during the operational phase of the mine with a family size and structure expected to closely parallel that of current Juneau residents. A disproportional increase in crime rates is, therefore, unlikely to occur as a result of the mine's operation.

93.69

Please see response no. 7.5.

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will reclamation work be monitored, and how often will the site be visited and by whom? How can the Forest Service guarantee that topsoil or other suitable growth medium will be stockpiled to ensure an adequate supply for revegetation purposes? Who will determine when and where it is "practicable" to reserve such material? (Note: Windrowing of top soil is cheaper for the operator, but is not sufficient to ensure that adequate supplies will be preserved intact for later use.) How is the \$750 per acre bonding cap under Alaska law relevant to an underground mine? How do state and Forest Service bonding requirements interrelate? Are there any areas of surface disturbance the reclamation of which the Forest Service will not be responsible for? If so, who will be responsible and what assurance is there those areas will be suitably reclaimed? Will there be any ongoing monitoring of the water quality of mine water draining from the "engineered outfalls"?

When will monitoring and reclamation plans be finalized? Will DEIS readers have any opportunity to review and comment on those plans? Does the Forest Service plan to issue the FEIS before final plans are completed?

Part G. This health and safety "plan" admits it is "conceptual in nature." Yet it also states that a major industrial facility such as the KV project "requires that a comprehensive Health and Safety plan [be] developed early in the project planning process." NWF suggests that such a comprehensive plan should have been developed and made available for review in the DEIS. A major deficiency of this "plan" (in addition to its extreme brevity) is that, while emphasizing worker training, it fails altogether to address construction and design features that would ensure safe working conditions. The company must take primary responsibility for providing a safe and healthy work environment.

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The final monitoring and reclamation plans will be developed by Kensington Venture based on stipulations that will be found in the Record of Decision. These detailed plans will be available for public review at the Juneau Ranger District during the operational permitting phase of the project. Please see Chapter 2 of the FEIS for an expanded discussion of monitoring and reclamation.

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Comment noted. Worker health and safety are the jurisdiction of both the Occupational Safety and Health Administration and the Mine Safety and Health Administration, both under the Secretary of Labor. Worker health and safety was not identified as a scoping issue.

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93.12 { Accordingly, NWF encourages the Forest Service to revise the draft Kensington Gold Project Draft EIS. A recised DEIS should address the points raised in this letter and in other public and agency comments and should incorporate all necessary baseline information concerning the existing environment. Thank you for this opportunity to comment. Please keep this office informed of all future developments relating to the Kensington Venture Mine Project.

93.72

Changes have been made in the FEIS to address many of your concerns. No deficiencies in the DEIS are large enough to warrant a supplement to the draft.

Sincerely,



Debra L. Donahue
Staff Counsel

cc: S. Douglas Miller, NWF
Rick Richins, Kensington Venture
Marilyn Twitchell, SCLDF

Enclosures



Working for the Nature of Tomorrow.

NATIONAL WILDLIFE FEDERATION

750 W. Second Ave., Suite 200, Anchorage, AK 99501 (907) 258-4800

August 30, 1991

Alaska Department of Environmental
Conservation
Southeast Regional Office
P.O. Box 32420
Juneau, AK 99803

Re: Kensington Venture 401 Certification

Dear Sir or Madam:

The National Wildlife Federation (NWF) has reviewed the draft NPDES permit issued by EPA-Region 10 for the proposed Kensington Venture Mine Project, as well as the Draft Environmental Impact Statement (DEIS) prepared for the U.S. Forest Service. NWF has serious doubts about the ability of this facility to comply with state and federal water quality regulations and the sufficiency of the proposed NPDES permit in assuring compliance with the law. We are concerned principally about (1) the lack of justification for a mixing zone for a discharge containing toxic, bioaccumulable substances; (2) the choice of applicable water quality standards, and the derivation of the selected criteria; (3) the inadequacy of baseline data and the resultant unreliability of predictions concerning probable concentrations of pollutants in the effluents; (4) the lack of a limit on the volume of effluent discharged; and (5) the adequacy of monitoring and reporting requirements.

In order for EPA to permit this new source of pollution, the Alaska Department of Environmental Conservation must first certify that the proposed discharge would comply with the applicable provisions of sections 208(e), 301, 302, 303, 306, and 307 of the Clean Water Act. 33 U.S.C. § 1341(a)(1); 40 CFR § 121.2; 18 AAC 15.130(b). NWF believes there is no reasonable assurance that Kensington's discharge would comply with Alaska water quality standards, 18 AAC 70, or applicable federal law. Therefore, NWF urges ADEC to deny a section 401 certificate of reasonable assurance for the Kensington Venture mine project. Our specific reasons follow.

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I. Mixing Zone

A principal area of concern to NWF is the Draft Permit's approval of a mixing zone. Under section 402 of the Clean Water Act, no person has a right to pollute without a permit, and pollutant discharge permits may be granted only if the discharge would comply with all applicable requirements. Cost is not a legitimate consideration in meeting water quality standards; hence, water-quality based permit limits are applied when technology-based limits are inadequate to achieve or maintain water quality standards. By what rationale, therefore, is violating water quality standards within a mixing zone justified?

NWF objects to a mixing zone of any size for the Kensington facility. Indeed, NWF seriously questions the appropriateness of mixing zones in the case of any discharge containing environmentally persistent substances. EPA has also pondered this issue. See EPA, Water Quality Standards Handbook 2-7 (Dec. 1983) ("Careful consideration must be given to the appropriateness of a mixing zone where a substance discharged is bioaccumulative, persistent, carcinogenic," etc.). ADEC has not adequately explained why a mixing zone is not objectionable given the persistent nature of many constituents of the proposed Kensington discharge.

Alaska's mixing zone rule, 18 AAC 70.032, allows (it does not require) a mixing zone to be prescribed "unless pollutants discharged could bioaccumulate; concentrate or persist in the environment; cause carcinogenic, mutagenic, or teratogenic effects; or otherwise present a risk to human health." *Id.* (a)(1) (emphasis added). Only a strained interpretation of this regulation would allow a mixing zone for a prolonged (perhaps indefinite) discharge of toxic heavy metals, such as the effluent from the Kensington mill. Yet rather than reflecting "careful consideration" of the appropriateness of a mixing zone, the Draft Permit and Fact Sheet appear to presume that a mixing zone will be approved. See, e.g., Fact Sheet at 4 ("available dilution in Lynn Canal is estimated at 100 to 1"); *id.* at 9 (monitoring program includes sampling "within and at the edge of the mixing zone").

There is little doubt that many if not all of the metal constituents of Kensington mine drainage and mill

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tailings would "persist" in the aquatic environment and that these metals are toxic at relatively low levels. It is also generally true that these substances accumulate in the tissues of organisms ("bioaccumulate"), becoming more "concentrated" in those tissues than in the ambient water. Clearly, the writers of the quoted portion of the mixing zone rule had such substances in mind. Admittedly, it is less clear whether all of these metals also "biomagnify" (increase in concentration up the food chain). See Kensington Gold Project Draft Environmental Impact Statement (DEIS) at 4-31 to -32 (suggesting that few heavy metals biomagnify). However, the mixing zone rule does not require such an effect; indeed, the term "biomagnify" does not appear in the rule.

Given the mandate of the Clean Water Act and the import of Alaska's mixing zone rule (which characterizes the test for disallowing a mixing zone as "could bioaccumulate," etc., not "would bioaccumulate"), any doubts about the tendency of metals to persist, concentrate, or biomagnify in a marine ecosystem or to present a risk to human health should be resolved in favor of the environment. This interpretation accords with the admonition in 18 AAC 70.032(c): "In determining whether a mixing zone is appropriate ..., the department will ensure that any other uses are protected." (Emphasis added.) Thus, absent convincing evidence to the contrary presented by the permit applicant, ADEC (and EPA) should assume that metals do bioaccumulate, concentrate, persist, or otherwise present a risk. In no case should it be the agency's duty to demonstrate that the discharge of metals would be acceptable under the tests of 18 AAC 70.032(a)(1).

Unfortunately, ADEC's interpretation of the mixing zone rule differs from the foregoing analysis. According to a draft memo from Doug Redburn to several ADEC staff dated 11-01-90 (hereinafter Redburn Memo), "bioaccumulation or persistence in the environment ... alone were not sufficient grounds for denying a mixing zone. Rather, a reasonable expectation of an adverse effect on public health or aquatic life would need to occur ... for denial to be upheld." The memo goes on to say that a mixing zone would be prohibited for carcinogens "only if their discharge is likely to cause carcinogenic, mutagenic or teratogenic EFFECTS [sic]." Id. (emphasis added).

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[Note: According to Doug Redburn, author of the memo, and Dave Sturdevant, one of the addressees, this memo constitutes official ADEC policy on implementation of the mixing zone rule. Personal conversations with D. Redburn and D. Sturdevant, week of Aug. 12, 1991. This is so apparently, in spite of the statement in the opening paragraph of the memo that, "[o]nce this draft is agreed to, Dave Sturdevant will be putting it into guidance format and sending to all of [the addressees] as part of our WQS interpretive file."]

ADEC's interpretation of the mixing zone rule, as stated in the memo and quoted above, effectively and improperly shifts the burden of proof from the applicant--to demonstrate that a discharge would not bioaccumulate, concentrate, persist, etc.--to ADEC--to show a "reasonable expectation" of an adverse effect. If ADEC disputes this characterization of its interpretation, it should carefully consider the implication of the last sentence of paragraph number 1--stating what demonstration is required "for denial [of a mixing zone] to be upheld." *Id.* The underlying premise of this statement--that there is some presumption in favor of granting mixing zones and that a denial of a mixing zone must be supportable by some evidence--is utterly false. The rule leaves the prescription of a mixing zone to the department's "discretion." 18 AAC 70.032(a). It does not require, under any circumstances, that a mixing zone be prescribed. And it is highly unlikely that a permit applicant could force ADEC to approve a mixing zone. *Cf.* 18 AAC 70.086 (affirming ADEC's enforcement discretion).

Moreover, ADEC's interpretation of the rule plainly implies that, if ADEC's denial of a mixing zone is to survive challenge, the agency must be able to point to "a reasonable expectation of an adverse effect ..." (based on site-specific characteristics ...). Redburn memo at para. 1. (It would be counterintuitive to interpret the policy as placing on the applicant the burden to make a showing that would guarantee it did not receive the approval sought.) In other words, the Redburn memo turns the mixing zone rule on its head.

In NWF's view, a mixing zone should be approved only a last resort. Secondary treatment of any discharge should be required before a mixing zone is considered. EPA has

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recognized that tailings ponds are often inadequate to achieve the necessary or desired level of metals reduction, and that more effective technologies for doing so are available and in use in other segments of the mining industry. EPA, Development Document for Effluent

Limitations Guidelines for the Ore Mining and Dressing Point Source Category [hereinafter Development Document] 511 (July 1978). In fact, "[l]ime precipitation is recommended for precipitation of metals" at flotation gold mills (the general type of treatment to be employed by the Kensington mill). *Id.* at 628. Accordingly, ADEC should consider whether the treatment of Kensington's tailings by some means in addition to cyanide destruction and settling would further reduce the levels of dissolved and suspended toxics and negate the need for a mixing zone. That inquiry and ADEC's conclusions should then be documented and the documentation made available for public review.

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NWF notes that, according to the DEIS, without some form of predischARGE treatment TSS levels probably will exceed water quality standards. DEIS at 4-28. This conclusion was corroborated by Kensington consultants at a water quality workshop in Juneau on August 9, who stated that some treatment of TSS (beyond mere settling in the tailings pond) will be required. This raises certain questions: If such treatment is possible, was it considered as a means of treating all impoundment water prior to discharge (instead of relying on a mixing zone)? To what extent would such treatment reduce the levels of metals in the tailings pond effluent? (The DEIS predicts but does not quantify a consequent reduction in metals levels. DEIS at 4-28 to -29.) Given that TSS levels in the effluent could not be predicted, how accurate are predictions of effluent metals levels? NWF reiterates: If Kensington tailings are to be discharged to Lynn Canal, additional treatment must first be required before a mixing zone request is entertained.

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93.73

Please see FEIS Chapters 2 and 4 for additional discussion of water treatment. Additional discussion can be found in JMM (1992).

93.74

Please see Chapters 2 and 4 of the FEIS for additional discussion of water treatment issues.

Also note that nowhere in the Applicant Proposal, DEIS or FEIS is the discharge of tailings to Lynn Canal proposed. See DEIS at page 2-26 through 2-28 for a discussion of the elimination of this option.

A speaker at the August 9 public hearing in Juneau raised an important concern regarding the Lynn Canal commercial salmon fishery. As he explained, there is an international market for wild salmon that commercial fishing in Alaska--including the waters of Lynn Canal--supplies. Thus, production of wild salmon is a current use of Lynn Canal (and other southeast Alaska waters) that must, under Alaska water quality standards, be protected.

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18 AAC 70.020(a)(2)(C) (marine water uses, growth and propagation of fish and shellfish). The confidence of consumers of wild salmon--and hence the demand--could be drastically affected by the knowledge or belief that one or more hardrock mines in southeast Alaska were spewing a toxic, heavy metals-laden effluent into important nursery grounds and feeding areas of those salmon stocks. If ADEC allows a mixing zone (a "pollution" zone, in the public's perception) for Kensington, A-J, and/or any other mines, consumers of wild salmon may turn away from the Alaska market in the belief that salmon produced here is tainted by arsenic, lead, mercury and other contaminants. This could have serious economic consequences for Alaska's fishing industry. It is imperative that ADEC take steps to "ensure that [this use is] protected." 18 AAC 70.032(c)

If ADEC and EPA persist in their approval of a mixing zone, however, MWF urges ADEC to review the proposed mixing zone in light of its EPA's advice in the Water Quality Standards Handbook concerning duration of exposure. See id. at 2-7. Here, Kensington tailings containing metals will be discharged for a minimum of 12 years and possibly much longer while the mine is in operation. In addition, the contribution of metals to Lynn Canal may continue indefinitely even after mine closure as a result of natural leaching and resuspension of sediments in the tailings pond or dissolution of tailings by the rerouted Sherman and Ophir Creeks. Thus, metals will be discharged to the Canal and available for uptake and concentration by aquatic organisms--particularly bottom feeders and resident and less mobile organisms--indefinitely. Concentrations of toxics may be relatively low but the total amounts deposited and the availability over time would be significant. As stated above, these are highly inappropriate conditions for approving a mixing zone.

In addition, ADEC should ensure that the shape and location of the prescribed mixing zone would accord with EPA's recommendations in the Water Quality Standards Handbook. Figure 1 in the Draft Permit shows a rectangular mixing zone (although required monitoring will not be sufficient to delineate the actual boundaries). Is a rectangular, as opposed to the suggested circular, configuration justified? Will the effluent plume hug the shore, contrary to EPA's advice? See Handbook at 2-8. ADEC must ensure that the mixing zone is "as small as

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practicable," 18 AAC 70.032(d), and should require as a condition of certification additional monitoring to ensure compliance with the boundaries of the mixing zone.

NWF also questions whether baseline data adequate to fully characterize the receiving waters are available. See section III, below. The need for baseline data pertains not only to defining a mixing zone, but to outfall siting requirements as well. State water quality standards for toxics are intended to protect fish, shellfish, and wildlife from long-term exposure to toxic substances; therefore, it is important to know the background variability (that is, variability with respect to time of day, season, depth, or location) of toxics concentrations in the receiving water. Two or three samples are insufficient to assess this variability.

NWF is also concerned by how ADEC implements its mixing zone regulation. It appears ADEC minimizes the attention paid to the requirements and considerations set forth in the rule, 18 AAC 70.032(b), emphasizing instead the wishes of the applicant. See e.g., Memorandum from Kenwyn George to Gene Rehfield, ADEC (Dec. 12, 1990) concerning A-J Mine application ("The 100:1 dilution [for cyanide] was chosen because ... this was the factor used by George Wilson ... as the one requested by Ott Engineering" (emphasis added)).

EPA's fact sheet and draft permit lack any discussion of the justification for a mixing zone in this case. And ADEC does not, in advance of its 401 certification decision, make its analysis publicly available. Thus, it cannot be determined from available documents how or whether ADEC accounted for the following regulatory factors: volume and flow rate of the effluent; mixing characteristics of the receiving water; quality of the effluent; or total horizontal area and cumulative linear length of all mixing zones (if others exist) in Lynn Canal. See 18 AAC 70.032(b)(1)-(4), (e)(2). The Kenwyn George memo is cause for concern that ADEC may simply concede to the wishes of Kensington Venture as it apparently did to Echo Bay. If ADEC neglects these evaluations in accommodating the applicant's desires, it abuses its regulatory discretion. No developer is entitled to pollute navigable waters, nor is a polluter entitled to a mixing zone for its discharge.

93.75

Refer to Chapter 4 of the FEIS and to the technical support document Kessler and Vigers (1992). The estimated natural variability of seawater constituents in Lynn Canal is based on over 140 samples, and not 2 or 3 as suggested. These samples were collected at 7 stations and various depths over a complete seasonal cycle (i.e., September 1988 to April 1989). Horizontal mixing and dispersion processes (supplemented by more minor vertical mixing) prevent the isolation of any one region from the Lynn Canal receiving water body in general for more than a few days or weeks at a time. Thus the baseline sampling locations are more than adequate to spatially characterize the baseline chemistry of Lynn Canal.

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93.16

There are discrepancies within and among the DEIS and EPA documents concerning available and required dilution that further concern us. The DEIS states that a 120:1 dilution is needed to reduce lead levels in the discharge to the acute toxicity criterion, DEIS at 4-15; EPA's Fact Sheet accompanying the draft NPDES permit states that the available dilution is 100; and the DEIS at 4-26 references a "minimum dilution of 85... to required to achieve ambient water quality criteria." Also, the reference at 4-19 of the DEIS to a 5:1 dilution ratio needed to reduce toxic concentrations (copper, specifically) to acute criteria levels in the event of a "worst case" spill is drastically different than the 120:1 ratio cited for lead at page 4-15 of the DEIS. How can these discrepancies be reconciled? Also, how will the lead concentration be further reduced to the chronic toxicity criterion, or to the water quality standard if that is a still lower number? These differences are grounds for serious concern over the proposed mixing zone and compliance with water quality standards.

93.76

Please see response no. 93.35.

It is also relevant here that, with respect to the proposed A-J Mine discharge, EPA stated that "actual available dilution" cannot be determined until the diffuser is performance tested after the discharge commences. A-J Mine Fact Sheet at 11; see also Draft A-J Mine Permit at 13. The counterpart documents for Kensington, however, make no mention of diffuser testing or of any uncertainty regarding the stated available dilution. NWF believes that diffuser testing should be required and performed before a permit is issued. Given that (1) actual available dilution cannot be determined until the diffuser is performance tested, (2) inadequate baseline water quality data are available for Lynn Canal, and (3) no one knows with any certainty what the chemical composition of the effluent will actually be, there is far too little assurance that water quality will be protected. Testing the diffuser, at least under simulated conditions, would at least lessen this uncertainty. Alternatively, the permit should at least specify what action will be taken if the performance test results are substandard.

The potential for the uncertainties listed in the foregoing paragraph to result in water quality standards violations is even more disturbing when enforcement

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realities are considered. ADEC often seems unwilling to enforce water quality standards and permit limits, and EPA's oversight authority, for a variety of reasons, is seldom exercised. An illustrative incident involved the Greens Creek Mine on Admiralty Island. According to a record of a telephone call from Gene Rehfield, ADEC, to Sylvia Kawabata, EPA, on Jan. 30, 1990, Greens Creek had reported to EPA it was having "problems with meeting [its] cyanide limit." According to the report, Rehfield said ADEC was "willing to change the limit." Will ADEC simply change the water quality standards or enlarge the mixing zone if current predictions for Kensington prove incorrect? This illustrates the folly of issuing a premature or unrealistic permit--before operating parameters are thoroughly understood and baseline conditions known so that permit limits will be adequate and achievable.

NWF also urges ADEC to state in the 401 certificate that the mixing zone will not simply be enlarged if the NOEC for the most sensitive species is determined to be less than 1% effluent. See Draft Permit at 7. Indeed, a mixing zone, if approved, should not subsequently be enlarged for any reason. Finally, even if a mixing zone could be justified in these circumstances with respect to certain toxics (an assumption NWF disputes), a mixing zone is impermissible for any parameter for which the applicable water quality criterion is already exceeded. See section II, below.

II. Selection of Applicable Water Quality Standards

NWF objects to the treatment that the subject of the selection of water quality standards has received in both the A-J Mine permitting process and in the Draft Permit and Fact Sheet for the Kensington discharge. This is a crucial issue that warrants considerably more reasoned, public discussion than it has received.

Under Alaska (and federal) law, the applicable water quality standards for toxics and other deleterious substances are the lesser of (1) 0.01 times the lowest measured 96 hour LC₅₀, (2) EPA "Gold Book" values, or (3) Alaska drinking water standards. 18 AAC 70.020(b) (table of water quality criteria at II.C. Toxics). According to EPA, "ADEC has concluded that the available LC₅₀ data do not result in standards more stringent than existing 'Gold

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Book' criteria." Fact Sheet at 6. This ambiguous conclusion is suspect for several reasons. First, the Draft Permit for the A-J Mine concluded that the LC50-derived numbers were the most stringent of the three alternatives. Second, the quoted conclusion is difficult to reconcile with ADEC's position as expressed in a March 6, 1991, draft memorandum from Douglas Redburn to Dick Stokes, Gene Rehfield, and Amy Kruse [hereinafter Draft Policy Memo]. And third, if LC50 data are available, it is difficult to imagine that LC50-derived standards are not more stringent than Gold Book criteria.

While EPA declares that "available LC50 data do not result in standards more stringent than existing 'Gold Book' criteria," ADEC claims that LC50 data for the species of concern (sensitive life stages of Alaskan species) simply are not available. Yet even ADEC's rationale for resorting to Gold Book standards (which the ADEC memo mystifyingly refers to as "the state-adopted criterion") rings hollow. First, it is propounded in a draft memorandum, while the relevant state water quality standard (promulgated by ADEC and approved by EPA) has existed in its current form for at least three years. Second, the stance adopted by ADEC in the memo was assumed midway through the permitting process for the A-J Mine. The A-J permit certainly is not the first 402 permit involving a toxic discharge to be issued since promulgation of the standard; hence, why was EPA unaware that "the State's approach is to use only toxicity data relevant to sensitive Alaskan species"? See Draft Policy Memo at 2. And finally, why has ADEC not recommended to EPA that both permit applicants (Echo Bay and Kensington Venture) obtain these toxicity data "as a condition of the certification of the federal permit," a condition that Mr. Redburn states in the memo the agency can impose? *Id.* at 1, 2, 3.

With respect to the final point in the foregoing paragraph, NWF calls ADEC's attention to Note 8, cited in the standard following the reference to the 96-hour LC50. Note 8 states: "Continuous-flow bioassays will apply if required by the department; static bioassays will apply otherwise." (Emphasis added.) This note plainly indicates that in all cases ADEC must require bioassays to determine the relevant LC50 value(s). ADEC's discretion is limited to the choice of bioassay procedure required; its discretion does not extend to deciding whether to impose the LC50-derived standard.

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In the same vein, NWF questions Mr. Redburn's statement: "Historically, Alaska has selectively required that 96 hr. LC50 data be obtained as a condition of certification to verify criteria-derived effluent limits." Draft Policy Memo at 3. How does ADEC justify a "selective" interpretation of a state water quality standard that requires application in every case of the most stringent of three possible choices of criteria? The standard as written does not confer such discretion. (And Note 8, as discussed above, limits the scope of ADEC's discretion to the choice of bioassay procedure--static or continuous flow.) Indeed, according the department the discretion to selectively implement the standard would violate the Clean Water Act. As EPA has stated on numerous occasions, "the CWA requires strict compliance with water quality standards." E.g., 49 Fed. Reg. 37,998, 38,038 (1984).

ADEC should require that pertinent 96-hour LC50 data be obtained by Kensington Venture (and Echo Bay) as a condition of certification. (We note that bioassays were conducted for the A-J Mine, presumably using test solutions that simulated the anticipated effluent composition. See Buell & Associates, Inc., Sheep Creek Bioassay Preliminary Data Report (May 1990).) The A-J Mine DEIS recommended "tests using an appropriate mixture of tailings pond effluent." If such tests were appropriate for A-J, they would be equally valuable for the Kensington project and should be required. See also discussion in section IV., above.

It is worth noting that, although both the A-J and Kensington draft permits require biomonitoring, this monitoring is not intended to "verify federally derived LC50 limits" (because ADEC apparently is advising EPA to use Gold Book criteria), nor is it clear from the permits that such monitoring would obtain LC50 data for sensitive Alaskan species or, if it would, that effluent limits would be revised to reflect such new information.

The ADEC memo further notes that "over the next several months ... written guidance on how the state's pollutant criteria are to be interpreted" would be prepared. Draft Policy Memo at 3. (Such guidance was not yet publicly available at the time this letter was

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written.) Our inescapable conclusion from reading the Redburn memo and observing these permitting actions is that EPA implemented the standard in the A-J permit as it has done in the past, and that ADEC is just now disputing EPA's interpretation and application. See Redburn memo at 3 ("Historically, Alaska has selectively required that 96 hr. LC50 data be obtained as a condition of certification to verify criteria-derived [i.e., EPA's federally derived] limits"; emphasis added).

NWF reminds ADEC that the subject water quality standard is federal, as well as state, law. ADEC cannot vary its "interpretation" of the criterion to suit the occasion, nor can it alter the effect of the standard as implemented in federal permits simply by adopting a construction that is at odds with EPA's. (We observe that a principal concern of the Redburn memo seems to be that ADEC not be held responsible for, nor obligated to defend, an administrative or court challenge to a "federally-derived [effluent] limit." See *id.* at 2-3. ADEC cannot relieve itself of responsibility, however, by retreating from a defensible, previously held construction of the standard. Nor is a reviewing official likely to be impressed with a state agency "interpretation" assumed so belatedly.)

Ideally, the construction of the standard should be that which the State and EPA agreed on at the time the state water quality standards were approved by EPA. If no explicit agreement was reached or if the agreement was not documented, the construction should be that to which ADEC has consistently adhered and which EPA has consistently applied in 402 permits issued for discharges in Alaska. Finally, ADEC's explanation of the toxics standard in the promised guidance must be considerably more thorough and well documented with historical references than the current, draft memo in order to meet NWF's objections.

Regardless of the justifiability of passing over the LC50-derived criteria, EPA compounded its error in the draft Kensington by dismissing Alaska drinking water standards as an available choice. EPA states: "No limitations were calculated based on the Alaska Drinking Water Standards, since the receiving waters are marine waters and not a source for drinking water." Fact Sheet at 7. This statement flies in the face of Alaska law, which

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plainly includes the drinking water standards (18 AAC 80) as one of the relevant choices of criteria for toxics applicable to "Marine Water Uses--Growth and Propagation of Fish, Shellfish, Aquatic Life, and Wildlife." 18 AAC 70.020(b) (table at II.C. Toxics). State law does not specify that drinking water standards are a choice only for waters that may be used to supply potable water.

Indeed, it is unlikely that marine waters in Alaska will ever be needed or used for drinking water supplies. (An exception is the use of seawater for drinking water by pleasure craft. According to testimony at the public hearing in Juneau on August 9, it is becoming increasingly common for pleasure boats to use a desalination process to obtain potable water for their passengers. This provides a practical reason but not a necessary, legal ground, however, for construing Alaska law as written.) Practically speaking, EPA's interpretation of state water quality standards reduces the choices of possible standards from three to two. Neither ADEC nor EPA can rewrite state law by mere interpretation. See discussion above.

Thus, EPA must reevaluate its choices of applicable criteria for metals and other substances in the Kensington permit. The LC50-derived standards are likely the most stringent values and thus should have been adopted in the permit. However, if the LC50-derived standards are not applicable for some reason (and NWF maintains that this conclusion must be adequately justified, as discussed above), Alaska drinking water standards would provide a more stringent effluent limitation than the Gold Book or NSPS values selected by EPA in the Draft Permit for certain constituents (e.g., cadmium, chromium, lead, selenium, silver). In these and possibly other instances, therefore, the drinking water standards, instead of the Gold Book or NSPS criteria, should have been selected.

EPA should display the three choices for each relevant parameter or constituent, preferably in tabular form as was done for the A-J Mine Draft Permit so that the public is informed as to the choices of applicable water quality criteria. EPA must make its own independent conclusion as to the applicable standard, because the appropriate standard is federal law and must be incorporated in this federal permit which EPA is responsible for enforcing. Finally, EPA's conclusion

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should be fully documented in a revised Draft Permit. It is highly inappropriate for ADEC and EPA to convert a permitting action (the instant action or the A-J Mine permitting process) to an ad hoc rulemaking proceeding as is effectively being done by the agencies' evolving interpretation of state water quality standards in these cases.

Based on the LC₅₀-derived standards reported in the A-J Mine draft NPDES permit, it appears water quality in Lynn Canal may already be impaired and water quality standards would be further violated by the Kensington draft permit. First, the background copper level in Lynn Canal (1.4 ug/l) exceeds the LC₅₀-derived copper standard (0.06 ug/l). (We note that, because the background copper level in Gastineau Channel exceeds this standard, EPA, in the draft A-J permit, properly prohibited the discharge of any copper to Gastineau Channel from the A-J facility. The background copper level in Lynn Canal is even higher than the background level in Gastineau Channel.)

Second, the background concentration of trivalent arsenic in Lynn Canal (1.9 ug/l) also exceeds the respective LC₅₀-derived standard (1.18 ug/l), as reported in the draft A-J Mine permit. Thus, until an adequate explanation is provided as to why the LC₅₀-derived standard does not apply, the permit must prohibit the discharge of arsenic as well. Similarly, the background zinc level (40 ug/l) greatly exceeds the LC₅₀-derived standard (1.9 ug/l). Accordingly, the discharge of zinc also must be forbidden. In each such instance ADEC may not certify the discharge if it would contain any quantity of these substances. (As a related matter, NWF questions the source of the values for background conditions, i.e., baseline water quality, which EPA used to derive the applicable effluent limitations. See Table 1 in Fact Sheet.)

As we have repeatedly stated, water quality standards may not be exceeded under any circumstances. Thus, where the background concentration of any constituent equals or exceeds the state water quality criterion for that substance, no additional discharge of that substance may be permitted. See *Oklahoma v. EPA*, 908 F.2d 595, 632-33 (10th Cir. 1990); *Cert. granted* 59 USLW 3672 (Apr. 2, 1991); see also 40 CFR § 122.44(d)(1)(i) (water quality-based permit limitations in NPDES permits "must control all

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pollutants ... which the Director determines are or may be discharged at a level which will ... contribute to an excursion above any State water quality standard").

The Tenth Circuit set forth this principle in *Oklahoma v. EPA*: "[W]here a proposed source would discharge effluents that would contribute to conditions currently constituting a violation of applicable water quality standards, such proposed source may not be permitted." 908 F.2d at 620; see also *id.* at 634. Until an adequate explanation is provided as to why the LC₅₀-derived standards do not apply in this case, ADEC may not certify a Kensington discharge that includes copper, arsenic, or zinc.

The Draft Permit (or Fact Sheet) also lacks an adequate explanation of the effluent limitation for total suspended solids (TSS). The permit adopts NSPS technology-based limits (30 mg/l maximum daily; 20 mg/l average monthly), see 40 CFR § 440.104(a), but the Fact Sheet offers no discussion of the Alaska water quality standard, if any. Information in the DEIS (that larval herring are adversely affected by 20 mg/l of suspended silt; DEIS at 4-29) indicates that the NSPS criteria for TSS are inadequate to protect existing uses of Lynn Canal. Thus, a more stringent effluent limitation is needed. NWF also questions whether it is appropriate to measure TSS in the outfall pipe, and objects to the proposal to require only weekly measurement of TSS. See discussion in section V., below. See also DEIS at 4-28 (explaining that TSS levels were not predicted because pilot plant conditions cannot simulate actual tailings pond conditions).

NWF further questions whether EPA considered the effect on aquatic organisms within the mixing zone of a total residual chlorine level of up to 200 ug/l. The Alaska water quality standard for marine water uses--growth and propagation of fish, shellfish, aquatic life, and wildlife--is 2 ug/l for salmonid fish. Thus, the draft effluent limit is 100 times greater than the standard--a factor apparently derived from the calculated "available dilution" in Lynn Canal. Does this effluent limit reflect the actual, expected composition of tailings pond effluent, or is it simply a "gift" to the operator based on the "available dilution"? An explanation of this effluent limit is needed.

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The referenced statement has been removed and does not appear in the FEIS.

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The Draft Permit is also flawed by the absence of at least two effluent limitations--limits on turbidity and settleable solids--and possibly iron, as well. See Draft Permit at 3. Alaska water quality standards contain standards for turbidity and sediment that will apply to the effect of this facility's discharge. See 18 AAC 70.020(b) (table at II.C. Turbidity, Sediment). The value for turbidity is simply left blank in the effluent limitations table, and there is no mention of the sediment standard or any effluent limitation on settleable solids designed to assure compliance with that standard. It is not possible to determine from available documents whether an effluent limit for iron is required, but certainly iron will exist in the tailings and process wastewater. The Fact Sheet should address this pollutant, and the permit should set an effluent limit if appropriate. It is imperative that the permit incorporate effluent limitations for all relevant parameters, given the possibility that a court would require specific effluent limitations in this permit in order to enforce the respective water quality standards against Kensington. See Trustees for Alaska v. Environmental Protection Agency, 749 F.2d 549, 557 (9th Cir. 1984).

Lastly, and notwithstanding our overarching objections to the choice of applicable water quality standards, NWF questions the mechanics of EPA's effluent limitations calculations. Why did EPA choose to use the "99th percentile limitations" instead of the 95th percentile as recommended in Attachments 1 and 3? Both attachments (which are excerpts from EPA's publication, the Permit Writer's Guide) state that the 95th percentile is "usually" used. Attachment 3 explains: "The 95th percentile is generally used for both permit limits [maximum daily and average monthly] unless monitoring will be so frequent (e.g., daily values) as to provide sufficient confidence that the true performance will be known." Given that the Draft Permit requires daily monitoring of only pH and chlorine, the conditions for using the 99th as opposed to the 95th percentile have not been met. Thus, the "Selected Permit Effluent Limitations" reported in Table 2 in the Fact Sheet and on page 3 of the Draft Permit should be the 95th percentile values reported in Table 1 in the Fact Sheet. In our view, ADEC must obtain satisfactory answers to all these questions before

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it can safely certify the Kensington discharge will comply with all applicable water quality requirements.

III. Baseline Data and Unreliability of Predictions of Discharge Quality

The next fundamental area of concern to NWF is the reliability of predictions (in the DEIS and presumably underlying EPA's permit deliberations) concerning probable concentrations of pollutants in Kensington effluents. The DEIS and EPA's Fact Sheet offer no tangible information by which to judge whether the mill tailings discharge (process wastewater or mine drainage) would meet applicable receiving water quality standards. Indeed, as noted above, the DEIS reports that TSS levels in the effluent could not be predicted because pilot plant procedures differ significantly from tailings pond conditions. DEIS at 4-28. Thus, estimates of effluent metals levels are subject to question. In addition, the variability of ore composition is unknown and cannot be predicted with any accuracy. Weather and operational conditions will also vary. These factors and others make it nearly impossible to place any confidence in company predictions of discharge quality.

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A related concern involves the availability of baseline data to adequately characterize the receiving waters. Without such data it is not possible to reliably predict the impact of the Kensington effluent, and it may not be possible to distinguish its impact (for enforcement purposes) after operations commence. It appears from the DEIS that "baseline" water quality data were obtained on only three sampling dates (in April, June and September) from six depths at each of two stations in Lynn Canal. See DEIS at App. D3-1. The precise locations of these samples cannot be determined from available information, nor is the location of the proposed outfall relative to either of the sampling stations evident. And EPA offers no statistical analysis or narrative explanation justifying reliance on these relatively few samples. When measured by a recommendation made during the A-J Mine permitting process, these data are clearly deficient. See Memorandum from Susan Mello, National Marine Fisheries Service, to various agencies involved in A-J planning (Aug. 24, 1990) (recommending a minimum of one year of specified baseline data, collected and analyzed according to specified criteria).

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The reader is referred to responses 86.9, 93.46, 93.74, 93.75 and 93.79 as well as to Chapter 4 of the FEIS for a more complete discussion. Any impact assessment has associated with it a complex of uncertainties and assumptions that propagates through the estimation procedure. The only practical way to overcome this inherent limitation is to adopt a balance between calculation precision and underlying assumptions that bias towards overestimation. This approach was used in the analysis and, in all probability, the impact estimates presented are overestimates of the effects that will actually occur.

ADEC is responsible for issuing a determination on State water quality standards. This determination has not been made at this time.

Ore variability is addressed in Kirkham (1991). This report assimilates all available data and finds little variability in the ore.

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Refer also to the response no. 93.45. A map of baseline data sampling locations which was omitted from the DEIS has been included in the FEIS. Basic sampling statistical theory states that any incremental increase (i.e., environmental impact) can be measured provided that an appropriate sampling effort is applied. As the sampling effort increases the statistical uncertainty from random error decreases. On the other hand, for a relatively pristine environment such as Lynn Canal random analytical error will normally dominant all other forms of error. Increasing the size of the baseline data set should decrease the statistical variability. To compensate for baseline uncertainty the two standard deviation upper and the two standard deviation lower limits were used where appropriate in making the DEIS predictions. Since increasing the size of the baseline data set reduces this range, it would serve to only reduce, not increase the estimated environmental impact. For this reason, it cannot be argued that the baseline data set limits the Kensington Project environmental impact assessment.

In addition, the Draft Permit and Fact Sheet ignore the question of mine drainage water quality, as does the DEIS. Any outflow from the mine will contain some (unknown) amount of mine water that has been in the mine for some extended period and therefore has had the opportunity to pick up metals. It is naive to assume, on the basis of apparently no information, that mine drainage will not pose any water quality problems. As Echo Bay Exploration explained with respect to mine drainage from the A-J Mine: "Water quality from mine drainage ... during mining cannot be specifically characterized since mining is not occurring.... Quantities and Quality will change daily during mine life depending on rainfall, runoff, area of mining[,] temperature, and many other variables. In summary, mine drainage will change as the mine is developed." EBE response at 15 to a question (#10) posed by the Bureau of Land Management regarding "the nature of mine drainage" (dated June 8, 1989) (emphasis added).

Nevertheless, the impossibility of accurately predicting mine drainage water quality does not excuse EPA from failing altogether to examine the question. Nor does it permit ADEC to overlook this factor in determining whether the discharge would meet state water quality standards. As with all necessary baseline data, ADEC must consider whether sufficient information is available or must be obtained as a condition of the 401 certificate.

IV. Precipitation/Evaporation and NSPS

NWF has advised EPA that the draft Kensington permit must be revised to incorporate a limit on the volume of wastewater that may be discharged to Lynn Canal. The applicable NSPS limits the volume of discharged process wastewater to "the difference between annual precipitation falling on the treatment facility and the drainage area contributing runoff to the treatment facility and annual evaporation." See 40 CFR § 440.104(b)(2)(i), .132(b). Subpart L of the part 440 regulations defines "annual precipitation" and "annual evaporation" for purposes of determining NSPS limits. See 40 CFR § 440.132(b). Thus, the rules clearly contemplate limiting this discharge to a defined volume of water. EPA assumes that the average annual evaporation rate in the project area is zero and

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Baseline water quality data has been collected from two sampling sites that represent 50 year old mine drainage at the Kensington site (Surface water stations 101 and 108, from the 800 level adit and 2000 level adit, respectively). Please see Chapter 3, Ground Water Hydrology, for further discussion of mine drainage.

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estimates the "net precipitation on the tributary tailings pond drainage area" at 1652 gpm, or 2.38 mgd. Fact Sheet at 3. But the agency fails to incorporate this estimate or any other figure as a limit on the volume of water that may be discharged from the tailings pond to Lynn Canal. See Draft Permit at 3.

Without a volume limit, the permit is incomplete. More to the point, without this limit the regulatory agencies will be unable to ensure that the total volume of effluent does not exceed the NSPS limit. Because the NSPS limit is one of the applicable water quality requirements with which ADEC must certify compliance if the discharge is to be permitted, ADEC should also be concerned about this point. Furthermore, if EPA's assumption of a zero average evaporation rate is incorrect, the facility's discharge volume likely will exceed the allowable rate. EPA should explain its precipitation and evaporation calculations, and then incorporate the net precipitation figure as an effluent volume limitation in the permit.

EPA and ADEC may wish to consider whether it would be preferable not to allow mine drainage waters to be combined with process wastewaters, given that the regulations limit the dischargeable volume of the latter but not of the former. It will be difficult to enforce any limit on the volume of process wastewater discharged to Lynn Canal if these discharges are combined (unless the respective volume of mine drainage can also be measured).

V. Monitoring and Reporting

NWF has several concerns regarding the frequency of monitoring and reporting proposed in the Draft Permit. Each of these concerns could be met by revising the permit accordingly or by inclusion of an appropriate condition in the certification. For simplicity's sake, our comments often refer simply to revision of the permit. ADEC should not construe these comments as suggesting that EPA alone bears responsibility for addressing these problems.

NWF is concerned that monitoring called for in the draft NPDES permit may not be adequate to achieve the desired objectives of such a program. At a minimum, ADEC should include in the 401 certificate conditions comparable

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to the monitoring recommendations outlined in ADEC's "Comments on Proposed AJ Mine Monitoring Program," submitted with a cover letter from Amy Kruse, ADEC, to Frank Bergstrom, Echo Bay Mines (Oct. 16, 1990). For example, it is not clear that the location of Lynn Canal monitoring sites is responsive to ADEC concerns. Also, there is no requirement in the Kensington draft permit to monitor groundwater as ADEC had recommended for A-J. At a minimum, detection of groundwater contamination should trigger a cessation of mill operations, and the 401 certificate or permit should so specify.

Such a requirement, however, should not be limited to groundwater monitoring. The 401 certificate should state, if the permit itself does not, "what preventive or corrective actions will be taken should [any] permit parameter limits be exceeded." See ADEC, "Comments on Proposed AJ Mine Monitoring Program." Possible corrective actions include not only "notification of the agencies, cleanup, and monitoring," *id.*, but curtailment or cessation of operations (and hence discharging) as well.

The proposed Environmental Monitoring Program raises many questions. First, why does the Kensington proposal lack the detail of the monitoring program incorporated in the A-J Mine draft permit? ADEC should encourage EPA to formulate comparable programs for both permits.

Second, EPA acknowledges that biomonitoring studies "are necessary since the chemical specific limitations (even though they reflect water quality standards for the protection of various uses) do not protect against the potential synergistic effects of all the pollutants in the effluent." Fact Sheet at 8. In NWF's view, this admission is an admission that federal and state water quality law would be violated by the permit as written. There is a presumption in the Clean Water Act against permitting new discharges of pollution. No discharge may be allowed unless all applicable water quality requirements would be met. See 33 U.S.C. § 1311(a). Furthermore, 18 AAC 70.020(b) states that toxics "shall not individually or in combination exceed" the lesser of three potentially relevant standards. (Emphasis added.)

Permitting Kensington's discharge without prior evidence that the combined constituents in the process

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wastewater and mine drainage waters would not exceed the applicable criteria or interfere with the maintenance of the existing marine uses (i.e., without first conducting bioassay studies using simulated process wastewater and mine drainage waters) violates these regulatory provisions. See discussion in sections I. and II., above. At a minimum, therefore, the 401 certificate should require performance of toxicity and bioaccumulation studies prior to permitting using solutions that simulate the expected composition of the effluents and aquatic species that occur in the vicinity of the proposed discharge site. In contrast, EPA's and ADEC's current approach would relegate what should be a permitting decision to a future, and uncertain, enforcement action based on the results of monitoring studies. This impermissibly shifts the burden of proof from the permit applicant to the regulatory agency or the public.

We also question what is meant by "significant adverse effects" in the statement "an expanded program may be implemented whenever significant adverse effects are indicated or detected." Draft Permit at 8. See also Draft Permit at 10 (stating what action is to be taken to "reduce the toxicity of the wastewater to acceptable levels" if "data indicate that pollutant concentrations are increasing in tissue samples"). What is meant by "acceptable levels" of "toxicity"? How will an "acceptable level" be determined? The detection of any regulatorily "significant" effect on water quality or water uses should be grounds for suspending the permit or requiring process or operational changes to reduce the volume or toxicity of the discharge and eliminate the effect. Mere monitoring in such an event will not bring the discharge into compliance with applicable law. If necessary, ADEC should incorporate this point as a condition of the 401 certificate.

On the same general topic, NWF is disturbed by certain statements of ADEC made in the context of the A-J Mine permitting process that are equally relevant to Kensington. In its "Comments on Proposed AJ Mine Monitoring Program," submitted with a cover letter from Amy Kruse, ADEC, to Frank Bergstrom, Echo Bay Mines (Oct. 16, 1990), ADEC states: "[I]n cases where established chemical criteria are exceeded, bioassays may be required in order to assess biological effects." If ADEC is using "criteria" in the technical, regulatory sense (that is the numeric

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portion of a water quality standard), then this statement is contrary to law. A question posed in the next paragraph of ADEC's comments suggests that is exactly how the term was used. ADEC asks: "What measures will be undertaken to minimize impacts to Gold Creek in the event of water quality criteria being exceeded? (Emphasis added.) As NWF has stated repeatedly in these comments and elsewhere, water quality criteria may not be exceeded.

NWF offers the following additional comments and questions relating to the proposed biomonitoring program. What will be the duration of chronic tests conducted pursuant to section I.B.1. of the draft permit? How will tests simulate actual conditions? (I.e., how will testing conditions be controlled to ensure that effluent concentrations, for example, are maintained throughout the duration of the test?) Tests should be conducted on organisms collected from the project area instead of on "commercially available" organisms. See section I.B.3.b. In fact, to satisfy the requirements of the toxics water quality standard, tests should be performed on "life stages of species identified by the department as being the most sensitive, biologically important to the location." With respect to metals bioaccumulation monitoring, the permit or certification should specify a minimum number of baseline samples (instead of, or in addition to, simply requiring quarterly samples beginning within 60 days of permit issuance). See section I.C.2. of Draft Permit.

The draft permit also raises numerous other monitoring-related questions. First, weekly measurement of total suspended solids (TSS) is inadequate. See Draft Permit at 3. EPA's NSPS regulation limits TSS to 30 mg/l--the maximum for any one day--and 20 mg/l--the "average of daily values for 30 consecutive days." 40 CFR § 440.104(a). The average value of 30 consecutive days cannot be determined by measuring a constituent on only a weekly basis. It seems clear the regulations contemplate daily measurement of TSS. This same reasoning also applies to the metals listed in the NSPS--copper, zinc, lead, mercury, and cadmium.

Second, Attachment 2 in EPA's Fact Sheet seems to suggest that monitoring for metals and possibly other constituents of the discharge should be more frequent than required by the Draft Permit. Attachment 2 states: "For

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limits that are inexpensive to monitor (such as metals) n [the number of samples or observations used to compute the average] should not be less than 10. EPA has used n=10 as the basis for average daily requirements in many effluent limitations guidelines." Yet the Kensington permit requires only weekly measurement (i.e., n = approximately 4) of all parameters with the exceptions of pH and chlorine. The permit should be rewritten to require at least ten measurements per month of these other constituents. (TSS, copper, zinc, lead, mercury, and cadmium should be measured daily, however; see discussion above). The permit should also be written to guard against the possibility warned of in EPA's Attachment 2--that a permittee could increase sampling during periods of good or "clean" operation to lower its reported average values.

Why is there no requirement that the permittee monitor metal levels in the sediments of Lynn Canal? The draft A-J Mine permit requires such monitoring, and also provides for additional wastewater treatment or operational changes if sediment metal concentrations increase. The Kensington permit should include a comparable provision. See also discussion in section II above concerning the need for a sediment-related effluent limitation.

The adequacy of the sampling regimen proposed for monitoring compliance with the mixing zone is also questionable. The public has no way of knowing whether sampling at the two selected depths and at the five identified locations will adequately characterize the impact of the discharge plume. See Draft Permit at 10 and Figure 1. Indeed, there appears to be considerable latitude in the description of the sampling scheme--"within 10 feet and within 50 feet of the water surface"--latitude that could lead to unacceptable variability in sampling results. Furthermore, common sense suggests that the frequency of the sampling is insufficient. Quarterly baseline (preoperational) sampling probably is not adequate to identify natural variation in water quality, and quarterly tests certainly will fall short of ensuring compliance with the mixing zone after facility operation commences. EPA should require in the permit a specified minimum number of baseline samples to be collected throughout the year. And more frequent, at least monthly, post-startup water quality sampling should be required, at least until there has been an opportunity to assess the

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operation of the facility and its ability to perform in accordance with expectations. Sampling frequency could be reduced thereafter, if appropriate.

NWF also has concerns regarding the reporting requirements in the Draft Permit. In particular, we believe that annual reporting to EPA and ADEC of the results of water chemistry testing done to ensure compliance with mixing zone boundaries is woefully inadequate. See Draft Permit at 11-12. These results should be reported to EPA and ADEC within one month after the samples are collected and analyzed. We note that section II of the Draft Permit requires monthly Discharge Monitoring Reports, see Draft Permit at 15, but it is not clear to which monitoring results the monthly reporting requirement applies. There should also be some assurance that the additional monitoring referred to in Section II.D. of the permit may not be used by the permittee to disguise violations or to decrease reported average values by sampling during ideal operating conditions.

The permit should specify where and how samples may be collected. ADEC should also assure itself and the public that all sampling locations are appropriate to the parameters being tested.

VI. Upset Conditions

NWF has several observations to offer concerning "upset" conditions. EPA's upset rule provides a defense to an action brought for noncompliance only with a technology-based effluent limit, not with any water quality-based limitation. 40 CFR § 122.41(n); see also Draft Permit at 21. EPA made clear in promulgating the final upset rule that "water quality standards are ... legally required to be met at all times," even during upset conditions. 49 Fed. Reg. 37,998, 38,038 (1984). For this reason, and because it would have been practically impossible to enforce, EPA rejected an industry-proposed upset defense for violating water-quality based permit limits. See Oklahoma v. EPA, 908 F.2d 595, 613 (10th Cir. 1990); cert. granted 59 USLW 3672 (Apr. 2, 1991).

Similarly, the "storm exemption" provision of Part 440 does not sanction a storm-caused violation of a water

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quality standard. 40 CFR § 440.131(b) applies only to "an overflow or excess discharge of effluent which does not meet the [technology-based] limitations of 40 CFR Part 440." Id. Thus, any argument that analogizes a 10-year, 24-hour storm event to an "upset" would be to no avail.

Our conclusion is not altered by 18 AAC 70.025.

This rule is not designed to excuse water quality violations after they occur, but to justify revising the criteria, on the basis of site-specific criteria, before a permit is issued. NWF offers no comment on this procedure at this time, other than to express our view that it would be inapplicable to violations of water quality standards resulting from the Kensington discharge.

Therefore, because most if not all of the effluent limitations in the Draft Permit are water quality-based, not technology-based, the regulatory upset provision will not apply. ADEC thus must be assured, before certifying Kensington's discharge as complying with all applicable water quality requirements, that water quality standards will not be violated if the facility experiences "upset"-type conditions.

To summarize, ADEC and EPA must first assure the public that a Kensington discharge permit would incorporate the appropriate water quality standards. In addition, before a permit is issued, ADEC or EPA must require collection and analysis of adequate baseline data. Then, unless the applicant can demonstrate that the discharge would comply with all applicable state and federal water quality requirements, no permit should be issued for this facility. Furthermore, at a minimum, ADEC must consider whether additional treatment would remove the need for a mixing zone, and EPA must verify that determination. EPA also must revise the Draft Permit to limit the volume of effluent that may be discharged, require prompt reporting of all monitoring results, and prescribe actions to be taken when monitoring results exceed established thresholds. For all the foregoing reasons, NWF requests that ADEC deny at this time the requested certification for the Kensington Venture gold project.

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NWF appreciates this opportunity to comment. Please keep this office advised of future developments with respect to the Kensington Venture permit application.

Sincerely,



Debra L. Donahue
Staff Counsel

cc: S. Douglas Miller, NWF
Director, Water Division, EPA-Region 10
Kenneth Mitchell, Tongass Nat'l Forest
Rick Richins, Kensington Venture
Marilyn Twitchell, SCLDF

Note: Attached to the two preceding NWF letters was a third letter dated August 30, 1991 from NWF to EPA Region X, Director, Water Division. The referenced letter is 19 pages in length. After thorough review, the Forest Service found that the letter did not illuminate new points or did it materially elucidate points made in the preceding two letters, at least insofar as the DEIS is concerned. It was determined that publishing a third lengthy, repetitive letter from the same author would not enhance the FEIS. Accordingly, the letter is on file at the Juneau Ranger District Office and can be reviewed on request.

United States
Environmental Protection
Agency



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1200 Sixth Avenue
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Alaska
Idaho
Oregon
Washington

JUNEAU
RANGER DISTRICT

REPLY TO
ATTN OF:

WD-126

Kenneth E. Mitchell
District Ranger
U.S.D.A. Forest Service
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

AUG 30 1991

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DISTRICT RANGER
DEPUTY RANGER
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Re: Kensington Gold Project Draft Environmental Impact Statement

Dear Mr. Mitchell:

The Environmental Protection Agency (EPA) has reviewed the Kensington Gold Project Draft Environmental Impact Statement (DEIS). The proposed project, which would be located approximately 45 miles north of Juneau, Alaska, entails development of an underground gold mine, ore milling, refining, and associated surface support facilities, a marine terminal at Lynn Canal, and a tailings impoundment located in the Sherman Creek valley. The mine project has an expected life of 12 years and would produce approximately 4,000 tons of ore per day. Our review is conducted in accordance with the National Environmental Policy Act (NEPA), and EPA's authorization under Section 309 of the Clean Air Act to determine whether the overall impacts associated with federally authorized actions are acceptable in terms of environmental quality, public health, and welfare.

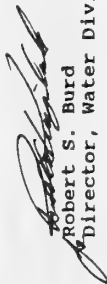
The proposed Kensington Gold Project requires a National Pollutant Discharge Elimination System (NPDES) permit from EPA. Because the project is defined as a new source under the NPDES regulations (40 CFR 122.2, and 122.29) and a major federal action under the Clean Water Act [Section 511(c)(1)], EPA is required to comply with NEPA prior to final action on the NPDES permit application. EPA is therefore a cooperating agency on the Kensington Gold Project EIS, and we have provided previous written comments on the overall scope of the EIS, certain background and baseline studies, and the preliminary draft versions of the DEIS.

EPA has rated the DEIS as LO (Lack of Objections). A summary of the EPA rating system for DEIS is enclosed for your reference. Based on our review of the EIS project alternatives analyses previously provided to us, and reflected in chapter 4 of the DEIS, EPA concurs with the Forest Service in the identification of the modified version of the Applicant's Proposal (Alternative B) as the preferred alternative. EPA's concerns pertain primarily to the possible downstream effects

associated with seepage of tailings leachate to Sherman Creek and with the transport of eroded tailings to Sherman Creek following reclamation, freshwater riparian and wetland habitat losses, marine aquatic habitat impacts, and the indirect cumulative effects associated with the project in conjunction with other mining projects in the Juneau area. Our detailed comments on the DEIS are attached.

Thank you for the opportunity to review the DEIS. We would be pleased to assist the Forest Service in addressing our comments. Rick Seaborne in the Environmental Review Section is the lead contact person for this review and can be contacted at (206) 553-8510 or (FTS) 399-8510.

Sincerely,



Robert S. Burd
Director, Water Division

Enclosures

U.S. Environmental Protection Agency (EPA) Region 10
Detailed Comments On Kensington Gold Project
Draft Environmental Impact Statement (DEIS)

1. Page 1-6, NPDES Permit Program, paragraph 2, sentence 2: EPA reviews of the EIS are in accordance with Section 309 of the Clean Air Act, not the Clean Water Act as indicated in the DEIS.
2. Page 2-4, Long Hole, Open Stopping, paragraph 3: The DEIS mentions that subsidence will not be a problem due in part to the "bulking effect of the broken material". If this is not backfilled material how is the broken material otherwise involved in the prevention of ground subsidence?
3. Page 2-46, Cover Material and Soil Replacement, paragraph 2: Peat oxidizes when exposed to air. Would any of the stockpiled peat be left and available for respreading after 14 years?
4. Pages 2-49 through 2-55, Table 2-5: The following comments, pertaining to Table 2-5, previously iterated in our comment letter of May 8, 1991, are intended to further distinguish the relative impacts associated with the project alternatives and help clarify the rationale for selection of the preferred alternative. This would also afford consistency with the more detailed discussions of these relative impacts in Chapter 4:

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Thank you for the clarifying information. Chapter 1 of the FEIS has been revised to reflect your input.

94.2

The reference is to hanging wall material that will be induced to cave by mass blasting for pillar recovery.

94.3

The DEIS is in error and a correction has been included in the FEIS. Use of peat as cover material would be very limited. Existing organic soils are a very poor medium for promoting plant establishment. It is expected that mineral soils will be used primarily for cover material since plant successional studies in southeastern Alaska have shown this to be a more suitable plant growth medium (see DEIS page 4-41).

94.4	<p>a. <u>Fisheries</u>: the relative impacts to fisheries of the alternatives are not consistently compared in the table. For instance, when comparing alternatives B and E, the relative direct freshwater habitat losses, sedimentation effects (e.g. from runoff and windblown tailings), seepage, spills, and marine outfall effects are not compared. Aquatic resources are a significant consideration; the most salient of the impacts should be better distinguished in the table.</p>	94.4	<p>a. <u>Fisheries</u>: the relative impacts to fisheries of the alternatives are not consistently compared in the table. For instance, when comparing alternatives B and E, the relative direct freshwater habitat losses, sedimentation effects (e.g. from runoff and windblown tailings), seepage, spills, and marine outfall effects are not compared. Aquatic resources are a significant consideration; the most salient of the impacts should be better distinguished in the table.</p>
94.5	<p>b. <u>Water Quality</u>: the relative impacts of alternatives B and E are not clear in the table. In reference to Alternative E, what about the factors, mentioned in the comment above, bearing on water quality? Which of the impacts of Alternative E are similar to, or are different than, Alternative B?</p>	94.5	<p>b. <u>Water Quality</u>: the relative impacts of alternatives B and Alternative E is the incorporation of a dewatered tailings disposal site in Alternative E. As a result, there would be more pollutant emissions in Alternative E. There would be slightly more pollutant emissions from increased power plant use for drying the tailings. The most significant difference between the two alternatives, however, is the amount of total suspended particulates (TSP) emissions from the tailings and tailings haul to storage. The TSP emissions from Alternative E are approximately 6.5 times larger than those in Alternative B. As a result of these TSP emissions, exceedances of the ambient air quality standards might occur occasionally outside the Kensington property boundary from Alternative D.</p>
94.6	<p>c. <u>Air Quality and Visibility</u>: air quality is a significant issue from both a resource and regulatory standpoint. The differences in air quality impacts associated with alternatives B and E are not indicated (e.g. suspended particulates-a significant difference, power plant emissions, tailings handling). Which air quality impacts are the same and which are different (only the steam plume is mentioned under Alternative E)?</p>	94.6	<p>c. <u>Air Quality and Visibility</u>: air quality is a significant issue from both a resource and regulatory standpoint. The differences in air quality impacts associated with alternatives B and E are not indicated (e.g. suspended particulates-a significant difference, power plant emissions, tailings handling). Which air quality impacts are the same and which are different (only the steam plume is mentioned under Alternative E)?</p>
94.7	<p>d. <u>Wildlife</u>: wetlands impacts are discussed in the table under the "wildlife" (terrestrial only) category, yet wetlands perform water quality, flow stabilization, groundwater recharge, as well as aquatic habitat and wildlife functions, and are important from a regulatory standpoint. The wetland losses, and their relative values, associated with alternatives D and E should be indicated.</p>	94.7	<p>d. <u>Wildlife</u>: wetlands impacts are discussed in the table under the "wildlife" (terrestrial only) category, yet wetlands perform water quality, flow stabilization, groundwater recharge, as well as aquatic habitat and wildlife functions, and are important from a regulatory standpoint. The wetland losses, and their relative values, associated with alternatives D and E should be indicated.</p>
94.8	<p>e. <u>Technical Feasibility</u>: the geotechnical risks (seismic, mass movement) of dry tailings disposal should be described in the table under "Technical Feasibility".</p>	94.8	<p>e. <u>Technical Feasibility</u>: the geotechnical risks (seismic, mass movement) of dry tailings disposal should be described in the table under "Technical Feasibility".</p>
94.9	<p>f. <u>Other</u>: the relative reclamation success of dry vs. wet tailings disposal is not addressed in the table (e.g. taking into account surface stability, availability of, and reapplication of topsoil, etc.). Given the large acreages involved, this is an important consideration vis-a-vis long-term effects.</p>	94.9	<p>f. <u>Other</u>: the relative reclamation success of dry vs. wet tailings disposal is not addressed in the table (e.g. taking into account surface stability, availability of, and reapplication of topsoil, etc.). Given the large acreages involved, this is an important consideration vis-a-vis long-term effects.</p>
94.10	<p>5. <u>Page 3-11, Surface Water Quality, Sherman Creek, paragraph 5</u>: The DEIS refers to elevated nitrate concentrations in Ophir Creek, Sherman Creek, and ground water in the underlying basin as "high background". The high nitrate values are accompanied also by elevated ammonia concentrations. No good basis has been presented to indicate that the elevated nitrate and ammonia are the result of natural background. These contaminants would seem more likely the result of mining activities, unless shown otherwise. Mitigation of current and future nitrate and ammonia contamination should be addressed in the FEIS.</p>	94.10	<p>5. <u>Page 3-11, Surface Water Quality, Sherman Creek, paragraph 5</u>: The DEIS refers to elevated nitrate concentrations in Ophir Creek, Sherman Creek, and ground water in the underlying basin as "high background". The high nitrate values are accompanied also by elevated ammonia concentrations. No good basis has been presented to indicate that the elevated nitrate and ammonia are the result of natural background. These contaminants would seem more likely the result of mining activities, unless shown otherwise. Mitigation of current and future nitrate and ammonia contamination should be addressed in the FEIS.</p>
94.11	<p>6. <u>Page 3-14, Wetlands Mapping, paragraph 1, sentence 3</u>: The reference for the wetlands delineation study needs to be cited.</p>	94.11	<p>6. <u>Page 3-14, Wetlands Mapping, paragraph 1, sentence 3</u>: The reference for the wetlands delineation study needs to be cited.</p>
94.12	<p>7. <u>Page 4-1, Introduction</u>: The FEIS should describe the basis for the subsequent discussions of cumulative effects, taking into account the Council On Environmental Quality (CEQ) definition at 40 CFR 1508.7. Are the cumulative effects of other mining projects only considered, and within what geographic region, and why?</p>	94.12	<p>7. <u>Page 4-1, Introduction</u>: The FEIS should describe the basis for the subsequent discussions of cumulative effects, taking into account the Council On Environmental Quality (CEQ) definition at 40 CFR 1508.7. Are the cumulative effects of other mining projects only considered, and within what geographic region, and why?</p>

8. Page 4-2, Production Activity: The second paragraph of this section indicates that ore processing emissions are not included in the analysis, but ore processing total suspended particulates (TSP) emissions are included in Table 4-1.

9. Page 4-2, Effects of Alternative B: The DEIS references the emissions inventory but does not cite the reference for the dispersion modeling analyses. This reference should also be cited in the FEIS.

The air quality impact analysis needs to reflect the moving of the proposed power plant to the location of the marine terminal under the preferred alternative (as per Alternative D).

The FEIS should indicate whether the project is or is not subject to Prevention of Significant Deterioration (PSD) review and the basis for that conclusion. Because the project as a whole would have the potential to emit less than 250 tons per

year of any regulated pollutant, it would be exempt from PSD review. However, because the power plant alone would have the potential to emit more than 100 tons per year of nitrogen oxides, the power plant would be subject to PSD review if it has a total heat input rate of more than 250 million Btu per hour and generates electricity using steam (i.e., a combined cycle turbine).

10. Page 4-4, Table 4-3: The Alaska standard for particulates was revised 7/21/91 to PM-10 (and is now the same as the federal PM-10 standard). The table and footnote (a) should be corrected accordingly.

11. Page 4-4, Table 4-4: This table and the accompanying text on page 4-2 (third column, top paragraph) have not included a comparison of modeled TSP concentrations with the Class II PSD increment for TSP ($19 \mu\text{g}/\text{m}^3$ annual, $37 \mu\text{g}/\text{m}^3$ 24 hour). This needs to be included in the FEIS to support a demonstration of project compliance with all applicable PSD increments.

12. Page 4-7, Summary: The first paragraph on this page indicates that TSP emissions from Alternative E would be double those of Alternative C. However, according to Table 4-8, TSP emissions from Alternative E would be over three times those of Alternative C.

13. Page 4-7, Summary: It is misleading for the last sentence of this section to indicate that the project is not subject to PSD regulations. Even if the project is not subject to PSD review, it still is subject to compliance with the PSD increment: (and National Ambient Air Quality Standards).

14. Page 4-15, Mill and Tailings Pond Effluent Characteristics, paragraph 15: The toxicity of cyanate, thiocyanate, and cyanogen chloride should be addressed in the FEIS (see Dauchy and others, 1980, Acute toxicity of cyanate to *Daphnia magna*: Bulletin of Environmental Contamination and Toxicology, vol. 25, p. 194-196).

94.14

The reference for the emissions inventory and the dispersion modeling analysis is the same: TRC Environmental Consultants, Inc. (TRC), 1991. Air Quality Permit Application: Kensington Venture, Volume 1, Project 7550-T12, January 16, 1991.

94.15

Pollutant concentrations at ground level resulting from turbine emissions are influenced mainly by the surrounding terrain. If there is elevated terrain located near the source, the emission plume will have less time to disperse before impacting the terrain. Consequently, the distance to elevated terrain is a dominant factor in inducing pollutant concentrations.

With gas turbines located near Comet Beach having emission rates identical to those in Alternative B, it is expected that the maximum modeled air pollutant concentrations outside the project boundary would be equal to or less than the modeled concentrations resulting from the turbines located at the process area. The reason for this is that the plume from the turbines located at Comet Beach must travel further before impacting high terrain than the plume from the turbines located at the process area.

94.16

The total annual emissions for each of the regulated pollutants from the Kensington project are given in DEIS Table 4.2. The 250 tons per year threshold for PSD applicability is not exceeded for any of the pollutants. The maximum heat input rate for all three turbines is 173 million Btu per hour, below the 250 million Btu per hour threshold for PSD applicability, and the turbines do not generate electricity using steam. From the above information it is clear that the Kensington Project is not subject to PSD review. This discussion has been included in the FEIS.

94.17

Thank you for the clarifying information. The FEIS has been revised per your input.

94.18

The baseline date for TSP has not been set in southeast Alaska. Therefore, the PSD increment for TSP is not consumed and Kensington is not required to show compliance with the PSD increment for TSP. Nevertheless, air quality dispersion modeling (TRC, 1991; Table 6.2) indicates that the maximum annual and 24-hour modeled TSP concentrations outside the Kensington property boundary are $3.23 \mu\text{g}/\text{m}^3$ and $17.71 \mu\text{g}/\text{m}^3$ respectively. These concentrations are well below the Class II PSD increments for TSP ($19 \mu\text{g}/\text{m}^3$ annual, $37 \mu\text{g}/\text{m}^3$ 24-hour). See FEIS Chapter 2 for additional discussion.

94.19

Thank you for pointing out the discrepancy.

15. Page 4-19, Tailings Disposal, paragraph 7: Depending on the transport path taken through lenses of sand and gravel, leachate could bypass the seepage pond and discharge to Sherman Creek. Furthermore, the future conditions at the site following reclamation will allow downstream transport of eroded tailings and waste rock. Consequently, the toxicity and mobility of tailings, tailings leachate, waste rock, and waste rock leachate are of particular importance.

Erosion of tailings and waste rock is projected to occur over the long-term. EPA cannot comment specifically on the adequacy of the chemical leaching tests of these materials due to the lack of information on materials used in the tests. The

source of the material and the representativeness of the chemical composition relative to future mined ore should be provided to EPA for review.

16. Page 4-24, Tailings Disposal, paragraph 8: The DEIS indicates that tailings pond effluent could improve the ground water quality. This does not appear plausible in light of the projected concentrations of cyanide and its breakdown products, and other species included in the dissolved fraction.

17. Page 4-27, Marine Discharges, paragraph 13: The description of the discharge plume gives only the height of the plume. The three dimensional extent of the plume in relation to Lynn Canal should be described for the purposes of determining the potential impact on migrating fish seeking to avoid concentrations of pollutants.

18. Page 4-29, Quantity and Quality, paragraph 6: The FEIS needs to further analyze the potential for cyanate, thiocyanate, cyanogen chloride, and ammonia to threaten marine organisms. These parameters should be included in assessing water quality impacts and in future monitoring.

19. Page 4-38, Tailings Impoundment, page 4-40, Effects of Alternative E (last paragraph): The FEIS should discuss the potential for the conventional tailings impoundment in Sherman Creek to provide back-up containment of spills which may occur in the vicinity of the processing area. This would not be possible under the dry tailings disposal alternative (Alternative E). The potential risk of spills to Sherman Creek in the absence of back-up containment offered by an in-stream impoundment should be discussed under Alternative E.

20. Page 4-44, Summary, last paragraph: The DEIS discusses briefly the potential for re-establishment of wetlands on the surface of the reclaimed tailings impoundment(s). The FEIS needs to indicate whether this mitigation is being proposed, along with more specifics on how this mitigation would be designed and constructed. Other compensatory mitigation options should be analyzed as well.

21. Page 4-70, Cumulative Effects: The FEIS should take into account the cumulative population increase and resulting impacts to housing and public services resulting from operation and shutdown of the Greens Creek Mine in addition to the Kensington and A-J Mines.

94.20

None of the proposed alternatives would be major stationary sources as defined under PSD regulations, and as a consequence the applicant has no obligation to submit demonstrations of compliance with PSD permitting requirements. However, the air quality permit application (TRC, 1991) does indicate that the Kensington Project will meet National Ambient Air Quality Standards and PSD increments.

94.21

The acute toxicity of cyanide has been well documented from an experimental standpoint. There has been some confusion over the validity of the information generated and the interpretation of the results. Chronic cyanide poisoning or chronic hazard levels have never been evidenced (Dangerous Properties of Industrial Material, Dec. 1983). Acute cyanide toxicity is essentially the result of an inhibition of metabolism. The cyanogen compounds are noncumulative poisons since they arrest the activity of all forms of animal life (EPA 1985). Only undissociated hydrogen cyanide affects the metabolic process. Strongly bonded compounds and complexes do not react biologically.

Based on the applicants proposal to treat the cyanide leached material with a strong oxidant prior to discharge to the tailings pond, the majority of the remaining (after treatment) total cyanide will be the strong acid dissociable compound. These are generally iron based insoluble or only slightly soluble complexes and therefore should, if the treatment process is designed and operated correctly, be of little environmental concern. Chapter 2 of the FEIS presents a more detailed descriptive summary of the cyanide treatment processes considered for the Kensington project. Also see JMM (1992) for additional discussion of this subject.

94.22

Please see DEIS Chapter 4, Surface Water Hydrology, Mill and Tailings Effluent Characteristics and Ground Water, Tailings Disposal.

94.23

Please see response no. 93.41

94.24

This sentence was deleted in the FEIS.

94.25

The analysis of discharge plume characteristics including volume, shape, mean depth, trapping level, mean internal dilution ratio and probable organism residence time, has been included in Chapter 4 of the FEIS. A technical and more complete discussion is presented in Kessler and Vigers (1992).

94.26

Please see response no. 94.21 for a discussion of cyanide toxicity and the related formation products. Ammonia is a final degradation product of cyanide treatment. Cyanate breaks down under natural conditions to CO₂ and ammonia, the rate of the reaction is dependent upon the reaction conditions. The available laboratory information (Lakfield No. 4) from the Kensington metallurgical testing indicates, as expected, the longer the reaction time, a greater conversion from cyanide to cyanate to ammonia. Available test data indicate that a total ammonia formation of 1 to 2 mg/l could be expected from the mill effluent. No seawater criteria have been adopted for ammonia and ammonia discharged into an open seawater environment at the expected levels is normally not a problem. This is not the case for freshwater streams where very acceptable ammonia concentration levels have been defined. Ammonia in the presence of chlorine will form mono and dichloramines. These are stable disinfectants often used in water treatment. However, under the conditions of the tailings pond and Lynn Canal these mine products would be expected to decompose rapidly.

Operational monitoring for the Kensington project would be site specific with stations located in and around the proposed mixing zone (See Draft NPDES Permit, Appendix D). Unless a serious accident or spill were to occur no acute alkaline chlorination or cyanide related toxicity problems would be anticipated as a result of a continuous marine discharge from the project.

94.27

Chapter 4 of the FEIS has been revised per your suggestion.

94.28

At this time, final approval of the impoundment design has not been granted by the Alaska Department of Natural Resources or the Corps of Engineers (COE). Therefore, any wetlands mitigation discussions among the Kensington Venture and involved agencies can only be conceptual.

Wetlands could be re-established on the surface of the reclaimed tailings impoundment area by developing wetlands in areas adjacent to the re-constructed stream channels. In addition, there would be an area on the surface of the reclaimed tailings where a small pond would remain. Vegetation around the pond site would be established creating additional wetland habitat. Wetland habitat would be designed in conjunction with the stream channel relocation aspect of final project reclamation.

The COE initiated review of the Kensington Venture's proposed project. The COE has indicated that construction of the channel diversion and tailings embankment structure might be considered mitigation through protection of downstream water quality. Reclamation of the project will provide additional mitigation measures. A detailed reclamation plan including wetlands mitigation will be included in the Plan of Operations, as required by 36 CFR 228.4 (c). The plan will also be a key component of the CBJ Large Mine Permit.

Also, the indirect cumulative effects of the Kensington Gold Project are not discussed in the DEIS. The local population increase attributable to the Kensington, A-J, and Greens Creek projects would be significant. This population growth will in turn result in increased surface runoff, non-point source

pollution, increased traffic, light, and noise, loss of terrestrial habitat, etc. The FEIS needs to address the indirect cumulative effects of mining development in the Juneau area which would otherwise not occur in the absence of such development.

22. Page 4-77. Effects of Alternative B: The potential for replacement of wetland functions and values at the location of the impoundment needs to be further discussed. Compensatory mitigation opportunities need to be discussed in the FEIS as a component of the reclamation plan.

The 1992 Energy and Water Development Appropriations Act contained provisions making it necessary for the Corps of Engineers to change some regulatory procedures concerning wetland delineations (the act mandated the use of the Corps 1987 Wetlands Delineation Manual instead of the 1989 Federal Manual for Identifying and Delineating Jurisdictional Wetlands).

Recent guidance from the office of the Chief of Engineers in Washington D.C. has instructed the COE to re-evaluate all pending permit actions and pending wetland delineations to determine if the wetland delineations are substantially the same or substantially different as a result of the above change in regulatory procedures.

The COE has reviewed the Kensington Gold Mine Project file and other applicable information as directed by the Chief of Engineers. Their preliminary determination of the wetland delineation for this project is substantially the same.

94.29

The operational cycle of the Green's Creek Mine is included in the baseline analysis of population projections.

94.30

In relation to Juneau's ten year average growth rate of 2.31 percent, the average annual rate of growth of 1.2 percent projected for the first four years of the mine's development is neither unprecedented nor unexpected. As indicated by the divergent baseline scenarios, there is a great deal of uncertainty about the future population of the CBJ. The number of Juneau residents could feasibly increase by 2,851 persons during the same time period even without the mine's development. Therefore, effects such as increased surface runoff, non-point source pollution, etc. are not a consequence of the Kensington mine in particular, but rather a consequence of the overall general increase in population expected for the Juneau area.

94.31

Please see response no. 93.58.

SUMMARY OF THE EPA RATING SYSTEM
FOR DRAFT ENVIRONMENTAL IMPACT STATEMENTS:
DEFINITIONS AND FOLLOW-UP ACTION *

Environmental Impact of the Action

LO--Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities with no more than minor changes to the proposal.

EC--Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to provide adequate protection for the environment. Corrective measures may require substantive changes to the preferred alternative or consideration of some other project alternative (including no action, or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EO--Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantive changes to the preferred alternative or consideration of some other project alternative (including the no-action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EU--Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of public health and/or environmental quality. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the CEO.

Adequacy of the Impact Statement

Category 1--Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2--Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3--Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action. The reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEO.

*From EPA Manual 1640 Policy and Procedures for the Review of Federal Actions Impacting the Environment

Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

August 30, 1991

Dear Mr. Mitchell,

I am completely opposed to the Kensington mine project as it is proposed. The meetings held locally to inform the public about the proposed mine project seemed clearly to promote and defend the project rather than to honestly answer questions and address concerns raised.

The company that performed the Environmental Impact Statement was hired by the mine company. This alone prejudices the report. It was not done by an independent unbiased agency, but by an agency that wishes to get contracts from other mining companies to do other such studies in the future. How many such contracts would they receive if they reported findings that indicated the mine might negatively impact the environment?

The extreme scantiness of the studies of marine life in the waters around Sherman Point clearly indicates the inadequacy of this EIS. Even the State Department of Fish and Game requested further study. Please insist that a real EIS be done by an independent agency that does thorough year-round monitoring of the site to provide baseline data. Without this information you cannot know what there is to impact, let alone what the impacts would likely be of the proposed discharge of poisons.

The hydrologists, fisheries biologists, geologists and other "experts" spoke to the public from the perspective of salespeople promoting the mine. I was shocked to hear fisheries biologists publicly testify that twelve years' discharge of 2500 gallons per minute of heavy metals and toxic chemicals into the clean waters of the Lynn Canal would not significantly impact any of the marine life there. Shocked but not surprised.

I have many carefully reasoned arguments against the proposed mine project. It is not a sound proposal economically, environmentally, socially, or aesthetically. There is, however, a bottom line which cannot be ignored and which must, therefore, be stated first.

Quite simply, accidents happen. This needs no elaboration in light of such incidents as the Exxon Valdez oil spill, the derailment of a trainload of toxic herbicides into the Sacramento River, and the diesel spill which has already occurred at the Kensington mine site. No clean-up plan could adequately cope with the failure of Kensington's proposed tailings dam, a rupture of the discharge pipe, a chemical or fuel spill from an off-loading tanker at the mine site, or any one of a number of other

95.1

The Forest Service has prepared the EIS under a third party contractor agreement with ACZ, Inc. as provided for under CEQ regulations (see 40 CFR 1506.5 and CEQ Forty Most Asked Questions).

95.2

The EIS contractor has no financial interest in the outcome of the project as required by the regulations cited in response no. 95.1. Statements of Financial Interest from the contractor and all subcontractors are available in the planning record.

very possible accidents. No amount of money could compensate for the damage thus caused.

This, then, is the bottom line. The Kensington mine project is unacceptable because it is sited in an unpolluted watershed and no accident must be allowed to happen here. Since no guarantees can possibly be made that no human error, environmental event (such as an earthquake) or other catalyst will ever cause a major, polluting accident at the proposed Kensington mine site at Sherman Point in the Lynn Canal, this mine must not be allowed to proceed.

There are, however, a multitude of other arguments against the mine as it is proposed. Bob Dick, of the Forest Service, when asked if he knew of any mine operating in southeast Alaska that had never had any violations of the terms of its permits answered, "No." That is another bottom line position. There is no reason to expect that this mine will be different from any other in complying to the terms of its permit.

Already the mine company has shown several indications of eagerness to save money at the cost of operating in an environmentally sound way. Kensington proposes to dump toxic waste into the pristine waters of the Lynn Canal rather than to institute the more expensive and cleaner alternative of a wastewater treatment plant. Their tailings dam design is very similar to dam designs that have failed elsewhere. The dam is designed for arid climates, not to withstand the heavy rainfall of southeast Alaska. The mine company is not proposing to backfill tailings and use dry storage for excess tailings, which again would be the more expensive and cleaner operating technique.

Kensington must not be allowed to put any discharge back into the Lynn Canal that is not as clean as the water already in this wilderness fjord. No operation of the mine should be allowed without a tailings dam to the best of available technology designed and built to last for perpetuity, regardless of economic cost. Why should the mine company be able to gather a quick profit and leave us with the probability of a toxic mess to clean up in the future?

Although I do not believe they should be, if permits are granted to Kensington to operate their proposed mine at Sherman Point, there must be continuous independent monitoring of all aspects of their operation to ensure that any violations are recognized and reported in a timely manner. "Independent" means monitoring by an agency not in the employ of the mine as the environmental impact statement agency was.

The Greens Creek Mine near Juneau has been cited for numerous violations of its permits and has continued to operate outside of the standards set to protect the environment. This is unacceptable anywhere, but certainly in the Lynn Canal. The current Forest Service policy of allowing companies to continue

95.3

Please see response no. 4.5.

95.4

Please see response no. 87.6.

95.5

Please see response no. 7.4.

95.6

Please see response no. 7.5.

95.7

Please see responses no. 83.5 and 95.1.

operations while out of compliance with the standards required by their permits is another strong argument against opening this mine at all.

Kensington should only be allowed to proceed with the understanding that the mine operations must be shut down immediately once a violation is reported until such time that the mine can operate within compliance to state and federal standards for water quality, etc.

There are several economic arguments to be made against this mine. The fisheries resources of the Lynn Canal form the backbone of the Haines economy, as well as providing important food sources for the community's residents. The fishery is a renewable resource, particularly valuable since it is the only salmon spawning system in southeast Alaska that lies entirely within US borders. This offers rich opportunities for aquaculture projects to sustain and increase our fish runs. The proposed mine acutely threatens this long-term, valuable and sustainable resource.

Tourism is another strong contributor to the Haines economy. The aesthetic disaster of the proposed Kensington mine with its huge scar on the lovely green hillside, half-mile tailings dam, noisy, smoking power plants, large tankers full of toxic chemicals and fuels, buildings defacing a beautiful wilderness site, and general industrial appearance cannot be overestimated. Tourists paying for vacations in Alaska are trying to avoid exactly such sights as this. The selling point of the Lynn Canal to tourists is its beauty, cleanliness, quiet and wilderness feeling. All this would be violated by the proposed mine and would take its toll of tourist dollars.

The proposed mine would have negative social affects on the community of Haines if the community is used by the mine as a support site and worker housing site. If it isn't, there is really no economic argument in favor of the mine as far as the community of Haines is concerned.

The mine is projected to run for twelve years. This very short-term project, compared to fisheries and tourism, would promote the boom-bust cycle that no healthy community desires. Haines is slowly and steadily growing using only its natural beauty and renewable resources as income sources. No mine is needed here, and one could actually be detrimental if the community first expanded and then had to contract to accommodate the mine's twelve-year operation plan.

This is the time for an awakening on the part of such federal regulatory agencies as the Forest Service and the Environmental Protection Agency. All over the country people are experiencing the negative effects to their health, homes and livelihoods of just such projects as the one Kensington proposes. Many of us have moved to Alaska to get away from the polluted air and water of the "lower 48."

95.8

Each agency issuing permits on the Kensington Project would have standards for mine shutdown. If a violation occurs that causes an immediate threat of irreparable damage or harm the Forest Service would seek injunctive relief in the form of a court order which would require the operator to cease the violation. This would be done in accordance with Forest Service Manual, Title 2800 - Minerals and Geology.

95.9

Please see response no. 4.2.

95.10

Please see response no. 4.3.

95.11

Please see Chapter 4 of the FEIS for an expanded discussion of the socioeconomic impacts on Haines.

95.12

The Kensington Project is within lands designated by Congress as open to mineral entry. The Tongass Land Management Plan (Forest Plan) recognizes this designation.

95.12 { Let's begin a timely new trend in industrial development. Let's agree that some places are just not appropriate for this kind of operation; they are simply too valuable in every way just as they are to be risked for dubious economic gains. Certainly the Lynn Canal is such a place.

If the Forest Service and the EPA insist on taking the enormous risk of an accident despoiling this pristine environment, let's at least ensure that everything that can be controlled is done to the very highest standards possible with the latest technology available, regardless of short-term expense to the company. If mining can, in fact, be done in a way that does not cause environmental degradation, let's prove it here by insisting that Kensington develop the prototype of a modern, clean mine.

Let there be objective, thorough research studies done to establish the baseline data on the wildlife use, marine resources, air and water quality at the site. Let the best possible wastewater treatment plant be instituted. Let dry tailings be backfilled into the mine and excess tailings be stored dry. Let every aspect of the operation be monitored at every step by an unquestionably impartial agency to ensure that the highest possible standards for environmental purity are being maintained.

Let there be well-thought out, tested, and complete accident clean-up plans with the equipment and knowledge to carry them out regardless of expense to the company. Let there be the maximum possible assurance that the site will be restored to its premining condition when operations cease regardless of expense to the company. Under these conditions and no other should the mining company be permitted to operate the Kensington mine.

Unless the EPA and the Forest Service have excellent reason to believe that all this can and will be done, I urgently request that you deny all operating permits for the Kensington mine. The Lynn Canal is one of the last truly clean places on our planet. Please, let's keep it that way.

Sincerely,

Cecily Stern

Cecily Stern
P.O. Box 696
Haines, Alaska 99827



ALASKA MINERS ASSOCIATION, INC.

501 W. Northern Lights Blvd., Suite 203, Anchorage, Alaska 99503 FAX (907) 276-0347 Telephone (907) 276-0347

August 30, 1991

Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, AK 99801

JUNEAU
RANGER DISTRICT
- 5-91

DISTRICT RANGER
DEPUTY RANGER
REC'D
M & W
VIS

Re: Kensington Gold Project
Comments on the DEIS

Dear Mr. Mitchell:

Thank you for the opportunity to comment on the Draft Environmental Impact Statement regarding the Kensington Gold Project. This mine has the potential of providing several hundred good-paying, year-around, close-to-home, skilled jobs for the Juneau area. This is particularly important for Alaska due to the need for diversification of the state's economy. Job opportunities in oil and gas, timber and fishing are either stagnant or in decline. Mining is the best alternative for providing new jobs.

The U.S. Forest Service is to be complimented for the thoroughness and detail of this document. It is obvious that a tremendous amount of work has gone into this DEIS. It is also encouraging to see that the EIS process can be undertaken using science, facts and logic rather than the emotion and rhetoric that is so often used to stop projects or make them too costly to be profitable for the owner.

The Alaska Miners Association (AMA) supports opening of the Kensington Mine. After reviewing the DEIS we see that the mine can be opened in an environmentally sound manner. There are some areas where improvements can be made, but the document covers all of the relevant issues and does so in sufficient detail.

The Alaska Miners Association is concerned that the mine will be opened in an environmentally sound manner. In this day of increased environmental concern it is crucial that mining operations show the communities where they operate and the general public that negative environmental effects, if any, will be addressed and kept to a minimum. It is also crucial that the very positive effects of mining be clearly communicated to the community and the general public.

ALASKA MINERS ASSOCIATION, INC.

You will no doubt find the several minor inconsistencies that exist at various locations in the DEIS document. These items are not material but rather are minor discrepancies that will be corrected by a thorough review before the FEIS is completed. It is recognized that this document is not an engineering design, but rather an initial evaluation to insure that all of the major aspects of the project are recognized and that the impacts are defined. The DEIS does effectively address all of the major issues but we do have some suggestions for improvements.

Our recommendations involve three main areas. First, we urge you to not be swayed by the hype, emotion and rhetoric that have characterized the public comment meetings. Second, there are some parts of the document that are not as clear as they should be. Third, the document does not go far enough in showing the benefits that the mine will provide for the Juneau community, southeast Alaska, the state as a whole and the nation.

Firstly, we urge you to continue to focus on the facts and science of the project. We have attended the hearings and we have heard the hype, emotion and rhetoric that has been used against this project. We urge you not to be affected by this pressure. If there are legitimate concerns they must be addressed and dealt with using sound engineering solutions. What concerns the AMA is that most of the arguments that keep reappearing are not based on fact or science. They appear to be based on the pseudo-religious belief that wants nothing natural to be affected in any way. That belief is not going to change its position by negotiation and compromise. If you change the stipulations to do what they want now, they will merely raise new objections. Their objectives are to cause delays and changes in the project that will cost the developer time and money, with the hope that the developer will become frustrated and abandon the project. The argument claims insufficient studies, not enough baseline data, not enough years of observation, etc. These arguments are very predictable no matter what the project, no matter how many studies, observations, samples, or millions of dollars of studies have already been performed.

The arguments against discharges into the inlet and against the mixing zone fit the above discussion precisely. The facts and science show very clearly that the discharges and mixing zone meet the water quality standards. When logic and reasoning are added to the facts and science, it becomes even more obvious that the discharges are incredibly miniscule.

We feel that additional data should be included in the EIS that will help put the discharges and the volume of tailings into perspective. In particular, the quantities of and composition of the glacial material naturally flowing into the inlet should be included in the EIS. This data should be given for each of the streams that flow into the inlet and compared first with the mine discharge and then with the entire volume of tailings to be placed in the tailings impoundment.

96.1

While we agree that the data you suggest including in the FEIS would help establish a framework for discussion, the data are not readily available. Since this information is not essential to describing the impacts of the project we cannot justify the expense of collecting it.

ALASKA MINERS ASSOCIATION, INC.

The possible effects of the mine and of helicopter flights on the mountain goats is now becoming an issue. It should be noted that work has been occurring in the mine area for over ten years with no apparent effect on the goats. Examples should be included in the EIS from other locations where the presence of an operating mine has not adversely affected but rather benefited the wildlife populations. My personal knowledge of this includes Rocky Mountain Bighorn Sheep in Alberta, Canada, whitetailed deer in North Dakota, moose in interior Alaska, and Dall Sheep in interior Alaska. If you need additional information or contact names, please contact me.

It is very unfortunate that the Environmental Protection Agency does not allow the marine disposal of tailings. This is clearly the most environmentally sound way of dealing with the tailings. We are surprised that those opposed to the impoundment are not calling for marine disposal. This topic is mentioned in the DEIS but it should be expanded. Not allowing marine disposal of tailings is a political decision that goes against logic and against sound science. By far the least effect on the environment will occur if marine disposal is used and this should be clearly presented in the FEIS even if it is not allowed at this time.

The third major area where the EIS should be improved involves the benefits the mine will provide. Much of the public concern has centered on the potential negative changes that may occur if the mine is opened. However, the many and diverse benefits are not addressed as thoroughly as needed.

Safety of workers in a mine is a constant focus and concern in modern mining operations. All mine employees are trained and then retrained every year on safety practices, safe work procedures, fire fighting, mine rescue, first aid, etc. This is all required by federal law and many companies supplement that training with their own requirements. The result is that most mines are now safer places to work than normal home or commercial construction. There is, however, a major benefit to the community that is often not recognized. Because of their training to be careful and to use proper work techniques, lifting, bending, etc., the miners will provide a higher level of safety consciousness in the community. Also in the same vein, history has shown that the first aid training that the miners receive as part of their jobs will find more use in their homes and communities than at the mine. The effect is that the entire community benefits.

The addition of another mine in the Juneau area will also be of potential benefit for the existing workers at the Greens Creek Mine. Each mine has mine rescue teams especially trained for use in the event of major accidents or problems. A mutual benefit will result to both mines with the availability of a larger number of these highly trained rescue teams. Oftentimes the seriousness of an accident can be reduced by rapid response and this can be better insured with more teams in the area.

96.2

It has been documented that some mining operations create a "refuge effect" and can be beneficial to a variety of big game populations in the western United States. However, there is considerable evidence in the literature to suggest that mountain goats may be more prone than other species to displacement from loud noise sources such as helicopters. Therefore, comparisons to observed mining effects on other species may not be meaningful for use in assessing the effects of mining on the Lions Head mountain goat population. On the other hand, the fact that population projections estimated from observed numbers of mountain goats in the Lions Head Mountain area are similar to carrying capacity projected by the HSI model for this area may indicate that mountain goats have acclimated or adapted, to some degree, to past exploration activities. It is important to note, however, that few studies have documented what effects displacement has had on the overall health of a mountain goat population and that the effects of mining-related activities on mountain goat populations in southeast Alaska habitats have not been studied previously. Ongoing ADF&G monitoring studies of the Lions Head mountain goat population should increase our understanding of the potential effects of mining activity on mountain goat populations in southeast Alaska.

96.3

Submarine tailings disposal has been determined by EPA to be not permissible under the Clean Water Act. See DEIS Chapter 2.

96.4

The benefits to the current Juneau residents are not as great as those derived by the new workforce that will come to Juneau specifically to work at the Kensington mine. The traditionally low rate of unemployment in Juneau results in little demand for increased property taxes for Juneau home owners while increased demand for rental units means higher costs for current renters. The City has no ownership interest in the Kensington project and will not receive royalties from the mine's production. The low mill rate that the City applies to off-road property generates little tax revenue to offset the inevitable costs of serving a larger population. The FEIS does point out that the Kensington project offers high-paying year round employment opportunities and to the extent that current residents are included as a part of the workforce, this benefit can be captured.

96.5

While it may be true that the safety-consciousness of miners is higher than that of other occupations, unless the skills and ability are available for public access (such as a volunteer group) it is unlikely that the benefit of such practices will be realized outside of their immediate family unit or neighborhood.

ALASKA MINERS ASSOCIATION, INC.

The general level of community services should increase because of the increased number of people. Private businesses will be able to offer more variety and selection and the competition should increase, all to the benefit of all the residents of the Juneau area. The University should be able to offer a wider selection of classes, etc. It may be that no one area will see a major expansion, but the general level of services should improve and this needs to be clearly shown in the FEIS.

The addition of more than 200 new non-seasonal jobs should provide a stabilizing effect for the economy of southeast Alaska. There is, of course, an influx of short-term workers into the local community to work in tourism and this is good for the economy. The fishing industry is also good for the economy, especially in those years that have equitable prices and a good catch. But the mine employees will be Alaskans; they will be local residents with families. They will pay property taxes and will not be taking their hard-earned money out of the community, but rather will be making Juneau their home.

All industries will benefit from the opening of the Kensington Mine. They will benefit from added levels of products in the stores. They will not have to stock as much in their own businesses. This will help reduce the operating budget for everyone who buys the products. That includes fishermen, the construction industry, tourism businesses, state and local governments, and other mines.

There are also significant revenue benefits that will accrue to the City and Borough of Juneau directly from the increased property tax which will be paid by the miners. In this time of declining state oil revenues and of declining state budgets, such increases in revenues will be extremely important. Increases in mining and the diversification that results will provide a more stable tax base and allow for more effective management for local government.

The entire issue of economic stability has not been addressed as thoroughly in the DEIS as should be done. One aspect of this is that mines often operate longer than first estimated because additional ore reserves are located during the mine life. Also, new technological processes are often developed that allow for processing of lower grade rock that was previously uneconomical.

In conclusion, the Alaska Miners Association believes this EIS can be improved with the addition of the changes that we have recommended and we look forward to a rapid completion of the FEIS and the opening of the Kensington Mine.

Sincerely,


Steven C. Borell, P.E.
Executive Director

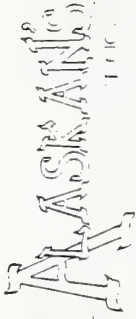
96.6

The general increase in community services, in terms of private businesses, is pointed out on page 4-65 of the DEIS. The operational expenditures of the mine and the personal expenditure of its employees are captured by industries that are far removed from the mine's operation and which serve to benefit the public in general. An increase in the number of people will only be followed by increased services when additional costs are incurred to provide those services. Such a scenario is depicted in the FEIS and, in fact, results in the community experiencing a fiscal deficit as a result of the mine's operation.

96.7

The increases in property tax are only significant if net revenue accruing to the CBJ is positive. Assuming per capita expenditures remain constant through the life of the project, the analysis conducted for the DEIS (page 4-68) shows the community experiencing a fiscal deficit throughout the first half of the project's development. This is inclusive of the expected revenues from property taxes collected from the mine-related workforce. An additional burden is placed on current homeowners as the mine-related demand for housing inflates assessed values and increases property tax payments.

The FEIS is based on information contained in the applicant's proposal and the analysis conducted for the expected life of the project. Risk and uncertainty are presumably built into the applicant's feasibility analysis and incorporated in the decision to proceed with the mine's development. While it is possible that additional reserves may be located and the longevity of the mine extended, it is equally likely that the mine could be shutdown sooner than expected as a result of fluctuating gold prices.



Fishing • Mining • Tourism • Logging

For Environmentally Sound Development
August 30, 1991

U.S.F.S.
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

Re: Public Hearing - Haines, Alaska
Kensington Gold Project

Gentlemen:

Alaskan's Inc., a non-profit State wide organization of concerned citizens on environmental and economic matters, has closely followed the testimony given at public hearings and the media presentation relative to the development of the Kensington mine.

We believe the Bureau of Land Management, responsible for the surveillance and decisions as to how this mine will be built and operated, has the professional expertise to see that it is done in an environmentally sound manner.

We commend Echo Bay's decision to respond to the concerns of fishermen, who feel that to discharge waste water north of Point Saint Mary's could have a harmful effect on marine habitat. It shows that Echo Bay is willing to spend a great deal of money to move the discharge point to a more active tidal flushing area.

We, Alaskan's Inc. favor the development of this mine under the guidelines established by law which dictates it be done in an environmentally sound manner.

The community of Juneau and Haines as well as the State of Alaska will then benefit from this project.

RANGER DISTRICT

Sincerely,

ALASKAN'S INC.

John J. Schnabel

John J. Schnabel
Manager

DISTRICT RANGER
DEPUTY RANGER

TLM

REC

F & W

BM

VIS

S/j

cc: U.S. EPA, Park Place Building, 13th Floor,
1200 Sixth Ave., WD-134, Seattle, WA. 98101

97.1

97.1

Thank you for your comments.

COMMENTS ON KENSINGTON EIS
JUNEAU DISTRICT

August 30, 1991

Mr. Ken Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

Your agency released the voluminous Kensington draft Environmental Impact Statement at the start of the commercial salmon season, following a pattern of release of important documents when those most affected by them have the least amount of time to read or comment on them. Most of the 180 members of the Salmon Bay Protective Association are on the water fishing for a living during the comment period. Therefore, please allow additional time after the close of the season in October for admission of comments into the record for your consideration.

1. In SBPA's oral testimony which I presented before you in Juneau, I submitted for the record a letter written last fall to EPA's Joe Roberto. The letter documented how a Mr. Mudder, a chemist for the Homestake Mining Co. in Lead South Dakota, plagiarized the work of another chemist concerning the effect of cyanide on fish and failed to report the actual measured impact of CN, as opposed to its estimated effect.

2. In other words, a published text on the subject reported a higher impact of cyanide through a test than the estimate Mr. Mudder reported and Mr. Mudder obviously used the same text as the source of both the estimate and test but failed to cite the text as the source. Please append the letter I gave you at the hearing to my comments here.

3. I was dismayed that the draft EIS makes Mr. Mudder's analysis the lynch pin of its cyanide discussion. Mudder 1990 page 4-32 EIS. We are opposed to a total cyanide measurement only, as a standard, because, contrary to Mr. Mudder, FEEN can be more toxic when ingested by fish and subjected to acidic conditions in the stomach where the relative benign form he proposes to measure breaks down into a highly toxic form.

4. This reliance of the EIS on inaccurate cyanide data, in my mind, seriously weakens the credibility of the document concerning the affects of chemicals on the marine environment.

5. To prevent either chronic or catastrophic entry of toxins into the marine environment, the SBPA recommends

- * that the Forest Service require dry storage of all waste rock and tailings hauled back into the empty holes the mine excavates,
- * a secondary water treatment plant, in addition to the settling pond, which eliminates toxics at the end of the pipe to 1/100 of the LC50 for the most sensitive organisms-- eg crab larvae and juveniles, herring larva, and salmon smolts,
- * a concrete dam to contain all tailings before storage in the mine shafts,
- * that all fuel or toxic substance tanks of any capacity be enclosed by four foot

high concrete walls. We observed 500 gallon fuel tanks without such protection, that at least two 40 foot vessels be ready for launch at all times with two miles of sea boom on site to contain any spills while unloading materials,

* that no further development be allowed until after one year of baseline studies are completed which reveal the background levels of heavy metals in blue mussels, salmon fry, and sculpins at four sites above and below the proposed mixing zone,

* that no mixing zone be allowed in Lynn Canal to dilute pollution.

SBPA comments

1

98.1 Please see response no. 1.1.

98.2 The EPA, during the NPDES permit process, will determine the CN discharge limits based on the analysis of total CN. Total CN analysis includes all forms of the compound. Total cyanide is the only form of the compound with analytical procedures recognized by EPA. No effluent will be permitted that does not meet both federal and State standards.

98.3 Please see response no. 7.4.

98.4 Please see response no. 4.5.

98.5 Based on the analysis of tailings dam stability presented in Chapter 4 of the DEIS we can find no basis for requiring a concrete tailings dam. In fact, for some earthquake situations an earth fill dam is more stable than a concrete dam in that it can be less brittle.

98.6 Fuel storage is required to conform with EPA regulations (40 CFR Part 112) and ADEC regulations (Alaska Oil Pollution Control Law and the Alaska Oil and Hazardous Substances Releases Law). The DEIS in Appendix A, Part E (Applicants Proposal, Spill Prevention Control Plan) discusses fuel storage and controls proposed by the Kensington Venture.

98.7 EPA, ADEC and the U.S. Coast Guard are responsible for administering spill containment requirements and as such have more expertise than the Forest Service in evaluating the need and efficacy of the suggestion. Your comments have been forwarded to these agencies for their consideration.

98.8 A requirement of the NPDES Permit, if one is issued, would be to initiate monitoring of heavy metals in organisms in the project vicinity within 60 days of the effective date of the permit. The permit would be issued after the Record of Decision is signed, which would provide for at least one year of heavy metal monitoring prior to any effluent being released. The draft NPDES Permit (Appendix D) stipulates that three indicator species would be monitored: blue mussels (*Mytilus edulis*), sea urchin (*Strangylocentrotus droebachiensis*), and a polychaete species. These species are prone to bioaccumulate heavy metals and would be at greater risk of doing so than salmon fry and sculpins. Samples would be collected quarterly in the immediate vicinity of the outfall and at four other sites in the area. Other requirements for heavy metal monitoring are outlined in the draft permit.

98.9 Please see response no. 4.5.

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Following the several thousand gallon spill of oil into Sherman Creek by the Kensington Venture last year, I observed a small diameter oil boom deployed willy nilly across the mouth. Water ran over and under it. It seemed to me an afterthought rather than an engineered solution. Only a sea boom with a curtain can seriously contain spills in the waters of Lynn Canal which too frequently has seas in excess of six feet during the winter.

6. Finally, we request the Forest Service require the Kensington Venture post a bond equal to the capitalized value of the commercial fleet that relies on the canal. At \$150,000 per commercial fishing operation and about 250 vessels reliant on the fishery for a substantial portion of their volume, the bond would exceed 30 million dollars. The Kensington Venture admitted at the Cbf's last public hearing on the project that they would not voluntarily provide a bond and would force fishermen to litigate and prove their losses. A bond would be the best incentive to insure no accidents occur.

Sincerely yours,



Alan Stein
President

98.10

Please see response no. 7.5.



JUNEAU
RANGER DISTRICT

12/91

Alliance for Juneau's Future, Inc.

August 30, 1991
DISTRICT RANGER
DEPUTY RANGER
TLM
REC
F & W
BM
VIS

Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

99.0

Re: Draft Environmental Impact Statement Kensington Gold Project

Dear Mr. Mitchell:

This report contains the comments of the Alliance for Juneau's Future, Inc. on the Draft Environmental Impact Statement Kensington Gold Project dated June 1, 1991.

The AJF is a Juneau based organization formed in the spring of 1989 for the purpose of diversifying the economy of the City and Borough of Juneau. It was founded primarily because of the anticipated fall in petroleum related revenues to the State of Alaska and the expected impacts on State employment within the CBJ as well as to CBJ revenues. The AJF is particularly interested in the benefits of economic diversification resulting from mining, energy development and improved transportation access. It has been closely following the development of both the Kensington and A-J Mines since its inception. The AJF has over 500 members and receives its funding from private sources. It does not receive financial support from any level of government nor has it accepted funds from any operating mining companies.

In its review and analysis of the Kensington DEIS, the AFJ approached the task by breaking it out into subject matter that would take advantage of the AJF membership expertise. Following meetings with the Forest Service, CBJ Department of Community Development and the Venture partners, the AJF Board of Directors appointed four Committees as follows:

Committee	Responsibility
AIR AND WATER	Air and water issues.
FISHERIES	All matters related to commercial and sport fishing, fish propagation, etc.
OPTIONS	Matters where there are two or more alternatives for development.
SOCIOECONOMIC	All aspects of impacts on CBJ and other Southeast Alaska communities including cumulative affects of the A-J Mine.

Each Committee had a designated chairman and met on numerous occasions. Committee members were selected on the basis of subject expertise. In addition to analyzing the DEIS other documents relevant to its assignment were reviewed. Meetings were also held with the Venture Partners and with various government resource agencies.

The AJF's analysis of the Kensington DEIS is submitted in four Committee Reports. In order to facilitate the work of the drafters of the EIS, the specific comments and findings of the four Committees are consolidated in a fifth and final section.

Prior to our review of the Kensington DEIS the AJF had not taken a position as to whether the Kensington Mine should be developed because it did not have adequate information to make an informed decision. With the publishing of the Kensington DEIS there is now a factual document to analyze and reach a conclusion. The AJF Board of Directors has carefully read and considered the Kensington DEIS. It has also reviewed the reports of the four Committees and received a briefing by each Committee Chairman. After reviewing the conclusions of each Committee Report, there appears to be no reason why the Kensington Mine should not be developed. Based on the evidence, the Board of Directors representing the AJF members believes the Kensington Mine can be developed in a manner that will not be detrimental to the environment and will enhance the socio-economic well-being of the CBJ, as well as other nearby communities in Southeast Alaska. Therefore, the AJF endorses the development of the Kensington Mine.

The AJF Board of Directors notes that during the Kensington DEIS public hearings there was some opposition to the mixing zone for disposal of the tailings pond effluent. The Clean Water Act and supporting regulations authorizes mixing zones. Since the DEIS states that the Mine will be in compliance with the State and Federal regulations on water quality standards, the elimination of the mixing zone would provide no real benefit. Instead, such a decision would only adversely effect the economic viability of the project.

Very truly yours,

Elizabeth A. Miller

Elizabeth Miller
Executive Director

99.1

The fifth section referred to is a restatement of the points raised throughout this comment document. It is not reprinted in the FEIS to minimize repetition.

REPORT OF AIR AND WATER QUALITY COMMITTEE

I. WORK OF COMMITTEE

The Air and Water Quality Committee (the Committee) of the Alliance for Juneau's Future, Inc. was charged with reviewing all aspects of the Kensington Gold Project DEIS regarding air and water matters. Included in this charge was the compliance with Federal and State air and water quality standards.

II. COMMITTEE MEMBERSHIP AND QUALIFICATIONS

Jack Cottrell, Chairman - Environmental Manager, Greens Creek Mining Co. 20 years experience in mining in the environmental area.

Ken Clements - NC Machinery. Experience and skills in emissions control.

Al Clough - Mineral specialist, Alaska Department of Commerce, 1 year. Geologist - Alaska Bureau of Mines, 6 years. Masters - Economic Geology.

Ron Hansen - B.A., Civil Engineering. Masters of Science, Civil Engineering. Masters, Public Administration. 35 years as environmental engineer in water pollution control and water resources development.

George Porter - Registered professional engineer, State of Alaska, Idaho and Montana. Registered land surveyor, State of Alaska. City engineer, Juneau 7 years. Director of Public Works 4 years. Engineer with State of Alaska 5 years.

III. COMMITTEE WORK

The Committee met on three occasions. Committee members employed their professional expertise and practical experience, with many members using the experience gained in reviewing and analyzing data from the A-J Mine DEIS in their work.

IV. DISCUSSION

The Committee found air quality issues to be non-existent and agreed with the DEIS that no environmental impact will be seen from planned air emission controls. Specific DEIS comments regarding water discharges (NPDES) were reviewed; the Committee agrees with the DEIS that the Project will meet EPA standards. DEIS receiving water comments were discussed and the Committee agrees with the DEIS that State standards will be met in the mixing zone.

Kensington Gold Project DEIS Review

V. COMMITTEE RECOMMENDATIONS

A. Substantive Matters

The Committee has reviewed the "Identification of Preferred Alternative" and Forest Service's recommended changes on page 2-48. The Committee believes two of the three Forest Service recommendations will have adverse impacts from an air and water perspective:

1. Placing rip rap in the channel to return flows to Sherman Creek (from Alternative C) would actually increase maintenance. No discussion was given about the size of rip rap in relation to stream flows. The Committee believes the size of rip rap required would exceed that which could be provided within the immediate vicinity and that it may have to be imported which may have significant economic consequences. In any event more maintenance will be required for rip rap as opposed to concrete lining. This will result in more adverse disturbance of stream flows over the life of the Mine.

99.2

2. The Committee believes the electric generator noise is not a compelling factor for the movement away from the camp and Mine entrance and, yet, as the charts on pages 4-81 and 4-83 indicate, dBa levels are not impacted regardless of where the generators are placed. By requiring the generators be moved from the Mine entrance, waste heat would not be available to heat the camp and the Mine. Therefore, additional electric energy or some other heat source such as oil, LNG or LPG will be required to replace this lost heat. The Committee believes emissions from the electric generators at the Mine entrance or elsewhere will be well within required standards, but the impact on air quality of locating the power plant at the entrance will be less. The DEIS should address the difference.

99.3

B. Additional Matters Which Should Be Addressed in the DEIS.

1. Additional treatment from cyanides was lightly discussed, but no specifics were outlined or defined as a potential problem.
2. Stormwater discharges were not noted.

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C. Suggested DEIS Corrections and Clarifications

1. Page 2-2, center column: The discussion of alternative E envisions "temporary storage of tailings during wet weather". In Southeast Alaska, wet weather is more than a temporary situation. Some

99.6

99.2

Please see Chapter 4 of the FEIS for additional discussion of riprap sizing in this channel.

99.3

Please see Chapter 4 of the FEIS for additional discussion of noise attenuation.

99.4

Please see response no. 86.4.

99.5

Storm water discharges from the main processing site would be directed into the tailings pond. Stormwater discharges are found in Kensington Venture (1989).

99.6

Weather conditions at the project site would require temporary storage for the dried tailings during rainy periods. FEIS Chapter 2 discusses criteria for determining storage needs. Dewatered tailings disposal was included as an alternative in response to public comments which considered tailings disposal methods to be a major issue.

The cost per ton for operation of the conventional tailings disposal system is approximately \$0.80. For the dry tailings alternative, the cost is approximately \$5.90 per ton. In the case of dry tailings, approximately \$4.00 per ton is required to filter, dry and compress the tailings. Disposing of 1,460,000 tons per year will cost \$1.2 million with the conventional system and \$8.6 million with the dry system (Richins, 1991).

Additional capital items required for this option include 12,000 cfm compressor station, a 3.5 MW LPG turbine generator and a 100 foot diameter tailings thickener are required to process the tailings.

- comment should be included in the discussion of this alternative regarding the extent of wet weather and the cost of required storage in the dry pending the temporary termination of wet weather. This option is discussed further on page 2-11, although there is no discussion of the extra amount of energy required to dewater the tailings nor is there discussion of the objective accomplished by the dewatering alternative. Why dewater tailings when disposal will be in Southeast's normal weather?
2. Page 2-18, left column, under Sewage Disposal, 1st paragraph: There is a statement saying, "treated effluent is known as gray water". This is erroneous. The gray water is waste derived from showers, kitchen and laundry wastes only, without any introduction of wastes from toilets. This error should be corrected. Note that this error is repeated later on in the DEIS.
3. Page 3-12, center column: The description of ground water resources should include an explanation of their shallow nature and the fact there is no existing use of the groundwater in this area and no potential future use of the groundwater in this area. These facts are significant in that they are not mentioned further in this report. The potential for use of groundwater is the reason for the concern with groundwater quality in the first place.
4. Page 3-18, right column: Figure 3-15 shows an outfall extending to a depth of 275 meters. It is the Committee's understanding that such a great depth is not required. There is no explanation why this depth was chosen. This depth appears, based on figure 3-16, that it is at the bottom of the trench. Figure 3-15 also should have a horizontal scale.
5. Page 4-14, left column, bottom paragraph: The statement says, "Secondary treatment system must provide 30 mg/liter BOD and 30 mg/liter total suspended solids." This is not precisely the case. Those numbers are limits which must not be exceeded.
6. Page 4-14, center column: The top paragraph indicates excess water would be treated and discharged through a marine outfall. There is no explanation as to the type of treatment to be provided.
7. Page 4-14, right column: This paragraph states additional treatment would be implemented to reduce cyanide levels in tailings pond effluent. No discussion is included regarding the type of treatment.
8. Page 4-15, left column, top sentence: This points out that xanthates break down readily to several constituents including hydrogen sulfide. This is a toxic gas with a density heavier than air. Perhaps some comments should be included regarding

99.6

Thank you for pointing out our error. The FEIS has been corrected.

99.7

Chapter 4 of the FEIS reflects your comment.

99.8

The line shown on Figure 3-15 in the DEIS is the proposed alignment of the marine outfall. A location south of Point Sherman is analyzed in the FEIS. The point of actual discharge has not been determined. The outfall discharge point was modeled at a depth of 100 meters for purposes of predicting impacts in the DEIS. The final depth of the outfall will be determined during the permitting process.

99.10

Thank you for clarifying the statement. The FEIS reflects your comment.

99.11

Alkaline chlorination is proposed for cyanide destruction. Additional treatment would be provided in the tailings pond through settling, degradation, volatilization and dilution processes. Alternative treatment options are also discussed in Chapters 2 and 4 of the FEIS.

99.12

Please see response no. 86.4.

99.13

The DEIS was in error. Xanthates do not break down into hydrogen sulfide. The FEIS has been corrected.

99.14	9.	expected dissipation of hydrogen sulfide, that is, is this in a confined area or at the tailings pond?	99.14	Please see response no. 99.8.
99.15	10.	<u>Page 4-22, center column:</u> The discussion of groundwater hydrology should point out that the groundwater occurrence is shallow and not in an extensive aquifer and, furthermore, there are no present uses of groundwater in the area and no anticipated future groundwater uses. <u>Page 4-23, right column, center paragraph:</u> The statement says, "seepage from the tailings impoundment would result in 'subsequent groundwater contamination'...." Perhaps one should conclude at this point that there would be an "effect" and after further study, maybe one could conclude that the effect could constitute contamination.	99.15	Comment noted.
99.16	11.	<u>Page 4-25, right column, summary:</u> This summary should also include the fact that groundwater resources in the area are minimal and there is no present or future foreseeable use of groundwater in this area.	99.16	Please see response no. 99.8.
99.17	12.	<u>Page 4-26, left column, Marine Discharges:</u> It is not certain that the NPDES permits specify the depth of the discharge. They certainly specify water quality standards and treatment level. It is more likely that the Alaska Department of Environmental Conservation would specify the mixing zone size, if one is allowed, rather than EPA through their NPDES permit.	99.17	The mixing zone, if allowed, would be specified by ADEC, as you point out. However, the NPDES Permit is the document that controls discharge from the project. The discharge limits finally set in the NPDES Permit will reflect the mixing zone findings by ADEC.
99.18	13.	<u>Page 4-27, left column, top sentence:</u> It should be pointed out that the analysis included herein using a three-port diffuser is quite limited. A more extensive diffuser with multi-ports is much more common and a more likely design option by the Kensington venture. This comment also applies to the assumed discharge depth of 100 meters. It is entirely possible that a shorter outfall using a more sophisticated diffuser system could achieve the required dilution much more economically and still meet water quality standards and permit conditions by EPA and DEC.	99.18	The analysis of diffuser performance has been expanded in Chapter 4 of the FEIS to include a shallow-water alternative (50 m depth) and a limited assessment of port configuration options. The supporting technical document is Kessler and Vigers (1992).
99.19	14.	<u>Page 4-33, right column, center paragraph:</u> The paragraph states that the applicant would be required to have an approved Spill Prevention Control and Countermeasure Plan. That plan is required by EPA. In addition, the DEIS should state that the DEC requires an Oil Spill Contingency Plan. Furthermore, recent agreements among state agencies have required that the evaluation for approval of the Oil Spill Contingency Plan include all the state resource agencies comments consolidated by the Division of Governmental Coordination in the Governor's Office and the issuance of a determination with consistency with the Coastal Zone Management Plan. Furthermore, the U.S. Coast	99.19	The FEIS has been revised to include this information.

Guard requires an Operations Manual for the transfer of oil from marine transportation to shoreline. The governmental controls in these four permits and approval for oil spill, control and oil handling is extensive and conservative.

Page 4-36, right column, 2nd paragraph: This paragraph describes extensive damage to eggs through freezing because of low water levels. This paragraph should also include a statement that the Department of Natural Resources and Fish and Game would not allow this to happen in so far as possible by control of withdrawals or diversions from the stream.

Page 4-37, center column, Spills: In addition to the SPCC plan, this DEIS should point out that DEC requires an Oil Spill Contingency Plan and U. S. Coast Guard requires an Operations Manual. Recent agreements require that DGC make a determination regarding the consistency of the operation with the Coastal Zone Management Plan.

Page A-11, center column, Sewage Disposal: The statement that treated effluent is known as gray water is incorrect. Gray water is something different. This error should be corrected.

Page D-8, left column, Lynn Canal: The last sentence describes water treatment in a tertiary treatment plant through which domestic wastewater is treated. It is not believed the tertiary level of treatment is required since secondary treatment is standard. Some explanation should be included here. Perhaps it is intended that treatment for the industrial wastes is one of the levels of treatment not applied to the domestic sewage and perhaps that is the reason for indicating tertiary treatment.

Page E-1, center paragraph, last line: Perhaps one could expand this statement about other agencies, in reference to Alaska Department of Environmental Conservation, in their issuance of an oil spill contingency plan. Other agencies, such as Division of Governmental Coordination, DNR and DFG also comment and advise on the oil spill contingency plan. In addition, DGC makes a determination of the operations' consistency with Coastal Zone Management plan.

VI. CONCLUSION

The Committee would recommend that regarding air and water, the selected Alternative B provides the best protection and utilization of these resources. Regarding water discharges (NPDES), the committee agrees with the DEIS that the project will meet EPA standards. The Committee also agrees with the DEIS that State standards will be met in the mixing zone.

99.20

This matter is clarified in the FEIS (see Chapter 4). Minimum flow requirements would be stipulated by the State to ensure that losses to eggs would not occur as a result of withdrawals during winter.

99.21

Please see response no. 99.19.

99.22

These comments relate to the applicant proposal and have been forwarded to the Kensington Venture. We note your comments insofar as they will affect the analysis in other sections of the EIS. Note that there is no proposal for tertiary treatment at this time.

REPORT OF FISHERIES COMMITTEE

I. WORK OF COMMITTEE

The Fisheries Committee (the Committee) of the Alliance for Juneau's Future, Inc. was charged with reviewing the Kensington DEIS from the perspective of the commercial and sports fisherman, including any impacts on fish propagation and other aquatic populations of Lynn Canal.

II. COMMITTEE MEMBERSHIP AND QUALIFICATIONS

The Committee consisted of 12 members. The member from Haines participated by conference telephone as noted.

Chuck Craig, Chairman -	N. C. Machinery Company
Don Burford -	Owner, Burford Concrete Products.
Bill Corbus -	President, Alaska Energy and Resources Company.
Rich Dwyer -	Operations Manager, Goldbelt Corporation, Inc.
Don Kalk -	Commercial multi-species fisherman.
Ladd Macaulay -	President, Douglas Island Pink and Chum Company (private non-profit salmon hatchery).
Al Shaw -	Director, Douglas Island Pink and Chum Company.
Jev Shelton -	Commercial gillnet fisherman.
Mark Thorson -	Commercial gillnet fisherman. Executive Director, United Southeast Alaska Gillnetters.
Tim Whiting -	Commercial gillnet fisherman
Jim Wilcox -	Real estate developer.
Stan Woods -	Commercial gillnet fisherman, Haines.

III. COMMITTEE WORK

The Committee met on five occasions. The Committee used the expertise of its own members, met with the Alaska Department of Fish and Game, U.S. Forest Service, Echo Bay Mines and their consultants, and contacted many other commercial fishermen.

IV. DISCUSSION

- A. The Lynn Canal area directly offshore of the Kensington Mine Project is a major salmon harvest location for the gillnet fleet. It is the single most important fishery area of the Haines gillnet fleet.
- B. Normally for at least sixteen weeks out of the year the area adjacent to the Mine, known as Point Sherman, is fished around the clock from Sunday through Wednesday. Not only are the fishing vessels present but the support vessels such as tenders and fish buyers are also in the area. Fishing goes on twenty four hours a day, with boats lined up waiting their turn to set their nets in the water close to the shore north of Point Sherman.
- C. During poor weather conditions, the area north of Point Sherman is a protected anchorage for fishing vessels seeking relief from the prevailing southeast wind. This is the only anchorage in the vicinity that provides such protection.
- D. There is some production of salmon in both Sherman Creek and Sweeney Creek but this area not considered a major source of salmon stock. The stream beds are of marginal quality for salmon to lay eggs in.
- E. There is no commercial halibut or crab fishing in the actual area of concern.
- F. Because of the remoteness of this spot, there is little, if any, sport fishing in either the streams or Lynn Canal.

V. COMMITTEE RECOMMENDATIONS

A. Substantive Matters

1. Move the tailings pond effluent outfall pipe south to Point Sherman or below it. This would improve natural mixing due to the tidal action. It would get the pipe out of the prime commercial fishing and sometimes congested anchorage area. This would reduce the chance of anchor fouling and move the mixing zone out of the possible fry retention area of the eddy swirl north of Point Sherman.
2. Conflicts between the Mine related marine traffic and the fishing boats could be a major problem due to the high density of fishing vessels during openings. The actual plan of how the Mine is going to address the traffic conflict needs to be spelled out exactly in order to see if it would be acceptable and workable for all concerned parties. If it is not possible to have the plan in its final form, then at least the guidelines that the traffic plan will follow

99.23

The Forest Service has developed Alternative F to show the marine outfall south of Point Sherman. Please see changes throughout the FEIS describing the effects of this change in project configuration.

99.24

The Kensington Venture has submitted a draft Memorandum of Understanding (MOU) to the City and Borough of Haines and the United Southeast Alaska Gillnetters Association to develop a mutually acceptable plan aimed at minimizing potential conflicts between barge traffic and fishing activities at Point Sherman. The intent of the MOU is the cooperative management of barge traffic and fishing vessels whereby scheduling would be coordinated by sharing a single communication network. A copy of the MOU can be found in the "Applicant Proposal - Part E" as Exhibit 1.

need to be made public. There may need to be included an on-going review process of the traffic plan so as to take into account changes in opening times in the future of the commercial fishery. This item is of extreme importance to the fishing fleet.

3. From the Committee's perspective Alternative B discussed on Page 2-33, would have the least impact on the fishing industry.

B. Subjects which should be addressed or expanded on in the Final EIS.

1. An exact drawing of where the tailings pond effluent outfall pipe will be located should be shown in the Final EIS. There is concern about anchors fouling on the pipe. The location and depth of the outfall pipe should also be shown. Again, this area is used as a fishing vessel anchoring during southeast winds.
2. More alternatives for the types and designs of the diffuser on the outfall pipe should be included in the Final EIS. This may suggest better (smaller) mixing zone characteristics.
3. Deeper effluent outfall line alternatives should be shown along with the possible effects on halibut and crab.
4. A specific plan for Sherman Creek water make up for winter low water periods should be included in the Final EIS. What can be done to minimize the impact on the eggs and fry?
5. There should be discussion concerning the effect on fry that may stay in the Point Sherman eddy swirl for long periods. Do the fry actually spend much time there and would the Mine or tailings related chemicals in the effluent adversely impact them?
6. There needs to be current and pertinent water sample data. The water sample data, taken two years ago, came from too far out in Lynn Canal and may not represent conditions actually found closer in to the Point Sherman area. This information was taken when marine discharge of the tailings was under consideration and was really too far out in Lynn Canal to be necessarily valid. New samples should be taken.

VI.

CONCLUSION

From the fishing perspective the Committee sees no reason why the development of the Kensington Mine should not be allowed to proceed. The Committee believes movement of the tailings pond outfall line to Point Sherman or further south would greatly reduce the impacts from the Mine on commercial fishing. The Committee recommends that Alternative B be selected.

The involved parties have indicated a willingness to cooperate, and acknowledged mutual benefits and needs. Specific items under consideration are:

- Publishing barge schedules and exchanging communications related to fishing schedules and fleet deployment.
- Mutual response in terms of personnel and emergency response equipment.
- Involvement by the Kensington Venture on the Local Emergency Planning Council.
- Contingency claims fund to cover lost or damaged fishing time and/or equipment caused by mining-related transportation.
- Completion of a Traffic Management Plan.

Negotiations related to the MOU are continuing.

99.25

Please see response no 99.9.

99.26

Refer to Chapter 4 of the FEIS and to Kessler and Vigers (1992).

99.27

Impacts would not be expected to be substantially different at greater depths.

99.28

ADF&G will establish low flow restrictions (if appropriate) on Sherman Creek. These restrictions will be enforced under the authority of AS 16.05.870, Protection of Fish and Game (Anadromous Fish Act). The restrictions would prevent removal of water from Sherman Creek during critical flow periods.

99.29

More information is provided in the FEIS (see Chapter 3) on the use of the Point Sherman area by juvenile salmon. The proposed discharge would not be expected to affect the use of this area by juvenile salmon nor the health and survival of those fish.

99.30

Refer to Chapter 4 of the FEIS, Kessler and Vigers (1992) and to responses 93.45, 93.74, 93.75 and 93.79.

REPORT OF OPTIONS COMMITTEE

I. WORK OF COMMITTEE

The charge of the Options Committee (the Committee) to the Alliance for Juneau's Future, Inc. was to analyze and take positions on important issues where there were alternatives for developing the Kensington Mine. The option/issues considered were as follows:

- A. Transportation alternates
- B. Dam and tailings alternates
- C. Power plant location alternates
- D. Mineral grinding mill alternates

II. COMMITTEE MEMBERSHIP AND QUALIFICATIONS

The Options Committee consisted of the following Juneau residents:

Mal Menzies, Chairman - Registered Professional Engineer (Civil) and Land Surveyor. Principal, R & M Engineering, Inc. 31 Years of Alaskan engineering experience. Member City and Borough of Juneau Planning Commission 1975 to 1983. Chairman 1982 to 1983.

Kurt Dzinich - Registered Professional Engineer. 20 years as Career Officer in U.S. Army Corp. of Engineers. Member Juneau Energy Advisory Committee 1983 to date. Chairman 1991.

Ralph Hunt - Transportation specialist (Maine and Trucking).

George Messerschmidt - Transportation specialist (Transfer).

Jim Wilson - Air transportation specialist. More than 20 years as commercial helicopter pilot and manager in Juneau vicinity.

III. WORK OF COMMITTEE

The Committee met on five occasions. Committee members applied their professional expertise and practical experience in their study the options available. Several members built upon knowledge gained in the review of the A-J Mine DEIS and information previously obtained by interviewing Echo Bay Mines, government agency representatives and others.

4. DISCUSSION

A. Transportation

1. Marine

There are two potential conflicts for Mine related marine traffic at Point Sherman/Comet Beach - commercial fishing and Marine Highway, tour ships and barge traffic transiting Lynn Canal. The area around Point Sherman is the commercial fishing Lynn Canal hot spot for the gillnet fleet. The AJF Fisheries Committee has addressed this conflict. This Committee concurs with the findings and recommendations of the Fisheries Committee and offers no further comments.

This Committee relied on the expertise of its members and reviewed the potential conflicts with marine traffic on Lynn Canal. Its experience suggests that this traffic will be well off shore and should not interfere with Mine marine traffic carrying cargo to and from Comet Beach.

The Committee has reviewed the feasibility of constructing a breakwater in the vicinity of Comet Beach and concurs with the conclusion and recommendations of the Forest Service and Applicant that no breakwater should be constructed at Comet Beach. The experience of some of the Committee members suggests that a tug and barge cannot, during certain periods of the fall, winter and spring even with a breakwater, manage Lynn Canal beach landings, either by tug towed or tug guided vessels. No amount of construction, regardless of size, will overcome the site conditions during certain periods of the year. Due to this adverse condition, the Applicant may desire a plan for storage of surplus materials in excess of the presently planned two months.

Transportation of hazardous material is adequately addressed within the document.

The limited port development desired by the Applicant and advocated by the Forest Service has the least impacts for Lynn Canal and on shore facilities. The Committee concurs with this finding.

2. Road and Water

The potential Slate Creek Cove Road with its protected landing area would work as a principal transportation mode during all times of the year. As such, the Committee supports such a transportation alternative. If such a transportation alternative is

99.31

Please see the discussion of Slate Creek Cove Common Facilities in Chapter 2 of the FEIS.

pursued, either now or sometime in the future, it should take a lesson from the Jualin Mine and "hide" its entrance, or "blend" it with the environment as much as possible. It is felt that any combined marine/road transport should analyze the combining of the Jualin Road and a Kensington/Slate Creek Cove road having only one port.

It is further felt that the DEIS should address more of the pros and cons of the Kensington using the Jualin Road and "tunneling" from the Jualin Mine to the Comet/Kensington Mine through hard rock as a further transportation alternative. The DEIS should address the permits required for the 8.5 miles of access road (from Slate Creek Cove) and if the nationwide 27 permits required for Forest Service access (logging) roads apply to drainages and muskegs for this alternative.

Air

The Committee concurs with the DEIS findings that a full instrument landing (ILS) airport should not be constructed at the Mine for the principal method of access for Mine workers. However this should not preclude the construction of a VFR (visual flight rules), STOL (short takeoffs and landings) airport to be used as a transportation alternate. The airfield would be for wheeled Dehaviland Otter, Beaver, and Cessna type aircraft.

The Committee concurs with the DEIS recommendation that a safe and consistent transportation mode for workmen to the Mine would be by large type helicopters.

B. Dam and Tailings Options

The Committee concurs with the preferred alternative of both the Applicant and the Forest Service on the principal site of the tailings dam and reservoir. The alternatives to the preferred dam option, Sweeney Creek and Slate Creek, should not be considered further due to impacts on areas of considerable distance from the immediate Mine work area. As such, they become not only environmentally questionable, but economically unsound. The Applicant's proposed dam and tailings disposal appeared to be an "industry standard" solution.

The Committee does not agree with the Forest Service proposed method for the dam spillway design which requires it be constructed of extremely large rip rap (6 ton class). Such rip rap is not commonly available (as inferred in the DEIS) at Kensington locale or elsewhere adjacent to the site. The cost, and therefore the economic feasibility of transporting and constructing such a rip rap spillway is questionable.

99.32

Please see response no. 99.32. Nationwide permits would not be sufficient for the road as proposed in Alternative C. If this alternative were selected, a Section 404 permit from the U.S. Army Corps of Engineers would be required for any placement of fill material in the waters of the United States.

99.33

Even a STOL VFR airstrip would not provide performance reliability equal to that available with helicopter transport. Surface resource impacts for such a strip would exceed those of the heliport and thus, would not address any issues raised during scoping.

99.34

Please see Chapter 4 of the FEIS for discussion of spillway design.

There are also safety considerations. The Forest Service should reconsider the Applicant's preferred option for a concrete dam spillway.

The concrete dam spillway is not readily degradable by the environment. The concrete spillway can be colored to "rock" and/or other "earth tones". The concrete spillway can have constructed within it, odd shaped protrusions that look and act like rock, performing the same "diffusing" characteristics that a rip spillway would generate.

C. Power Plant Location

The Committee concurs with the Applicant's preferred siting of the power plant near the Mine entrance. The Committee believes the technology is available and that the Applicant is correct in stating it can control the generator noise to prevent bothering the mountain goats. Monitoring stations for noise potentially affecting wildlife can be established throughout the Kensington/Comet valley to improve muffler characteristics of power generation if warranted.

The Committee cannot concur with the Forest Service preferred alternative of locating the powerhouse near tidewater in order to minimize noise for mountain goats. The Committee believes this to be energy wasteful from two perspectives. First, there will be power line losses resulting from transmitting the electric energy at tidewater up to the portal site where the permanent camp and Mine entrance are located. Second, waste heat from the powerhouse cannot be utilized if not located next to the permanent camp and Mine entrance.

Both the Mine and permanent camp require heat. If generator waste heat is not available, heat will have to come from another source whether it be from electricity, LPG or fuel oil. This will take additional energy which will have an undetermined impact on the Mine's economic efficiency and is inconsistent with good conservation practice. The U. S. Government in its national energy policy is trying to encourage conservation through such proven techniques as utilization of waste heat while the Forest Service is apparently, by the preferred alternative, attempting to discourage it.

D. Mineral Grinding Mill

The Applicant planned to place the grinding mill above ground. The Forest Service proposes that the grinding mill be placed in the Mine in order to eliminate noise disturbing to wildlife. The Applicant feels that noise can be properly muffled. The Committee concurs with the Applicant's preferred alternative. The Committee believes grinding mill noise can be controlled through mufflers and other devices.

99.35

Please see Chapter 4 of the FEIS for additional discussion of noise attenuation.

99.35

V. COMMITTEE RECOMMENDATIONS

A. Substantive Matters

1. Review the necessity of requiring the Applicant to move the power plant from the Permanent Camp to tidewater.
2. Review the necessity of requiring the Applicant to move the mineral grinding mill underground.
3. Fully develop in the EIS the Slate Creek road alternative.
4. Re-evaluate the Forest Service's preferred tailings dam spillway to an earthen concrete spillway.

B. Additional matters which should be addressed in the DEIS

1. Under electric energy sources discuss the option of extending a transmission line from the end of the Alaska Electric Light and Power Company facilities in order to utilize excess hydroelectric energy currently available from the Snettisham Hydroelectric Project.
2. Discuss the practicality and feasibility of constructing a VFR (Visual Flight Rules) STOL (Short TakeOffs and Landings) airport at the Mine to be used as a transportation alternate by less expensive fixed wing aircraft, (i.e. Dehaviland Otter, Beaver and Cessna's) for limited passenger/freight hauling over large rotor-wing aircraft.
3. In concurring with the helicopter mode of transport from Juneau to the Mine, the Committee finds the DEIS does not discuss
 - a. If the helicopter leaves from the City and Borough of Juneau (CBJ) airport, where and how do company and workmen park their cars and/or busses?
 - b. Does the CBJ airport terminal have the capacity to handle the additional population and helicopters associated with the Mine?
 - c. Will a private carrier build a rotor-wing facility at the CBJ airport to accommodate this proposed air traffic and will it have parking?
4. The DEIS does not address the possibility of bussing workmen from one or more central points within the CBJ to a point at the end or near the end of Glacier Highway for air transport to the Mine.

99.36

Please see the Record of Decision.

99.37

Please see response no. 99.36.

99.38

The Slate Creek Cove road was developed as Alternative C in the DEIS. This analysis has been carried through to the FEIS.

99.39

Please see response no. 99.36.

99.40

Please see response no. 91.1.

99.41

Please see response no. 99.33.

99.42

The DEIS at page 4-47 contains a discussion of airport parking. The assumption that workers would be dropped off at the airport and not need parking is based on the cost of parking at the airport and the 1 to 2 week periods that the workers would be gone from Juneau.

99.43

Please see the DEIS discussion of transportation (pages 4-71 to 4-76).

99.44

The current facilities are anticipated to be adequate to handle the additional helicopter traffic.

99.45

Please see the FEIS for an expanded discussion of this transportation proposal.

a. / If such a bus/air transport route is utilized, will a heliport/parking be constructed on private lands (individual landowners, or native corporation lands) or will it be constructed on CBJ or Forest Service leased and privately owned lands? Is land available for this use?

b. If there is such a bus/helicopter mode of transportation from the end of Glacier Highway, who will maintain the road in winter time snow conditions?

5. The DEIS does not address the possible transport (by helicopter) of workmen/women from Haines to Kensington.

C. Suggested DEIS corrections and clarifications - none.

VI. CONCLUSION

The Options Committee has reviewed what is considered to be four critical decisions related to the development of the Kensington Mine - transportation access, location of the tailings dam, location of the power plant and location of the mineral grinding mill. The Forest Service concurred with the Applicant's proposal on water and air transportation access matters as well as the location and method of tailings disposal.

The Committee takes exception with the Forest Service's preferred alternatives for the placement of the power plant and mineral grinding mill which are not in concurrence with that proposed by the Applicant. The Forest Service proposes moving the power plant to tidewater and the mineral grinding mill underground in order to minimize noise which it believes will disturb the goat population. The Committee believes the technology is available to dampen noise to the point of making each facility inaudible. The Committee strongly suggests the Forest Service review its position on these matters.

From its perspective the Options Committee sees no reason why the Kensington Mine should not be allowed to be developed.

99.46

At this time, the Kensington Venture has not announced any intention to provide air transportation for work personnel to or from Haines to the project site. Haines residents would be required to provide their own transportation to and from Juneau to meet scheduled helicopter flights.

REPORT OF SOCIOECONOMIC COMMITTEE

I. WORK OF COMMITTEE

The Socioeconomic Committee (the Committee) was charged with reviewing the Kensington DEIS in regards to the socio-economic impacts on the City and Borough of Juneau (CBJ) and other towns which might be impacted by mine development. The Committee particularly was interested in base line population projections and what could be done to mitigate the cumulative impacts on the CBJ from development of both the A-J and Kensington Mines.

II. COMMITTEE MEMBERSHIP AND QUALIFICATIONS

The Committee consisted of the following Juneau residents:

Dorothy Bradley, Chairman - Previous manager of Juneau Job Service, retired in Fall 1990. Many years in Department of Labor.

Lee Coffman - Promoted and developed Savings and Loans in the State of Alaska, organized state-wide Savings and Loans League. Chairman of the Board for Alaska Industrial Development Corporation. Former member of the Capitol Site Planning Commission.

Paul Mitchell - President, Alaska Federal Savings.

Ron Pagenkoff - B.A. Education, Business Administration, Major in Economics, University of San Francisco.

Ernie Polley, Spokesman - Planner Alaska Department of Education 1966 to 1986. Assemblyman City and Borough of Juneau 1978 and 1982. Mayor of City and Borough of Juneau 1985-1988. Chairman of Mayor's Fiscal Task Force 1990.

Tom Quinlan - Haines accountant and businessman.

Charlotte Richards - Life long resident of Juneau. Member of School board three years, two years as president.

Glenn Ryerson - Graduated U.S. Coast Guard Academy. Six year resident of Juneau. Two years as real estate sales associate for Alaska Coastal Homes.

III. COMMITTEE WORK

The Committee met on three occasions. Members were selected for the broad professional experience and knowledge needed by this committee. Many Committee members had prior experience in reviewing and analyzing data stemming from their work as members of the AJF Committee reviewing the A-J Mine proposal.

IV. DISCUSSION

From the socioeconomic perspective the Committee in a macro sense is concerned about two aspects of the DEIS. First, the DEIS relies on two population projections - Scenario A (Northern Economics, 1990) shows the CBJ population without the impact of the A-J or Kensington Mines peaking at 28,626 in 1992 and then falling to 24,271 by 2003 and Scenario B (Berger/ABAM) showing population peaking at 32,665 in 1998 and then declining. The Berger/ABAM population estimate was prepared for the CBJ in order to support mitigation requirements in connection with the Major Mine Permit the CBJ is preparing to issue for the A-J Mine. As of yet this projection has not passed public scrutiny. The Committee is reminded of the tendency of the CBJ and all other Alaska cities to inflate population data in order to increase their shares of State and Federal revenue sharing. The population projection runs counter to all the other work the Committee is aware that has been produced. In particular, the Committee was influenced by the findings of the Mayor's Fiscal Task Force.

Second, the DEIS fails to recognize the opportunity that the Mine offers to help solve the chronic unemployment problems of some communities of northern Southeast Alaska. Reference is made to Table 3-29 which shows annual unemployment ranging from 12.5% to 20.2% for the communities of Skagway-Yakutat-Angoon. Excluded from the DEIS is the unemployment data for Hoonah. Nor is there as any discussion of the past history and precariousness of the sawmill in Haines and its importance to that city's economy. Employment provided by the Mine could employ those workers if the sawmill were to permanently close as well as relieve the problems of unemployment in Angoon, Hoonah and Yakutat (See Appendix A).

V. COMMITTEE RECOMMENDATIONS

A. Substantive Matters

1. The Committee believes a range of scenarios to assess the socioeconomic impact of the Mine is warranted. However, by utilizing the Berger/ABAM Report as in Scenario B tends to add validity to it

99.47

The two baseline population scenarios were presented to address the very issues this question raises: the great amount of uncertainty that exists as to the future of Juneau's population base. From the standpoint of sensitivity analysis, it was necessary to include both projects. The important implication is that the immediate socioeconomic impacts to Juneau will be significant regardless of what the future brings.

99.48

There is a reasonable prospect that some project workers may live in Haines in addition to the anticipated Juneau worker population. As distance increases from the project it is increasingly unlikely that persons living in those communities would seek employment at the project. It is possible that some residents of Angoon, Hoonah and Yakutat may seek and find employment at the project. However, it is unlikely that the project would significantly improve employment in these communities.

99.49

The EIS provides two scenarios for future Juneau population projections because there is ongoing controversy about the economic future. The EIS makes no judgement about which scenario is more likely. The reader is left to review the impacts under the scenario that best fits his or her personal opinion of Juneau's future.

99.50

While the FEIS does not explicitly analyze the communities of Hoonah, Yakutat, and Angoon, the employment opportunities offered by the mine are not representative of the economic base of these communities and it is less likely that residents of these communities would seek employment at the Kensington mine. In many cases, individuals have been drawn to these smaller communities for reasons transcending monetary gain and would prefer to maintain their chosen lifestyle.

99.51

The employment information contained in the FEIS was provided by the applicant. The company proposes to transport employees only from the Juneau area, therefore, the majority of the workforce is expected to live in the CBJ. In the absence of specific actions by the company to reduce the impact to Juneau, any deviation from the published estimates would be purely arbitrary.

99.52

The FEIS lists a number of occupational opportunities that will arise at various stages of the mine's development. The types of occupations that are supported by the project are not representative of those composing the workforce of Haines and other small southeast Alaskan communities. Thus, the decision to relocate, commute, or otherwise arrange to work at the mine will be based purely on individual assessment of the potential benefits to be gained from re-training and the costs of abandoning the attributes of current lifestyles. There is no empirical data or method of analysis to address such a choice.

The lower housing costs and property taxes in nearby communities would offset the cost of commuting if it were considered in the decision to move there. It is more likely that the current residents have a budget and a lifestyle predicated on employment in the immediate area and any additional costs will result in reduced disposable income.

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The Kensington Venture has not informed the Forest Service of the details of shift scheduling. Details notwithstanding, we believe that the impacts displayed in the EIS represent the most reasonable forecast that can be developed.

when it has yet to be accepted by the CBJ Planning Commission. Eliminate reference to and use of the Berger/ABAM Report in the DEIS.

2. Address the positive impacts which the Mine could have on the high unemployment levels for Skagway, Yakutat and Angoon. Also discuss Hoonah unemployment and the lack of employment stability in Haines caused by the erratic operating record of its sawmill.

B. Additional matters which should be addressed in the DEIS

1. The Committee believes that a more careful analysis of the range of potential impacts could do much to resolve questions in the section on socio-economic impacts. The Committee does not dispute the information on the number of employees or the multiplier in terms of private sector support. It is recommended that the socio-economic impact be analyzed at 3 levels of Juneau based Mine employees: 100, 200 and 300. Although the Committee believes the EIS should consider the worst impact for the CBJ, it recommends that EIS use the mid-range figure of 200 as the upper limit for reasonable projections.

2. The Committee strongly recommends that missing information be included in the final EIS explaining the initial and final makeup of the work force, and the potential that a significant portion of these employees may actually reside in other communities--most notably Haines. With current and projected employment problems in fishing and timber it would seem reasonable to the Committee that employment at the Mine will be attractive to many who currently reside in other Southeastern communities and who wish to retain their residence in those communities.

3. Lower housing costs and property taxes in nearby communities could very well help offset the cost of commuting. The housing and population section would be clearer if it was explained that the Mine is only 30 miles from Haines. And that the bulk of the work force will be living during working hours in a permanent on-site camp. To be more specific, of the 340 employees only 20 of those will be required to live in Juneau. These are salaried office workers.

4. The Mine will operate with two shifts. At any one time there will be roughly 200 employees onsite and 100 offsite. Those hourly employees who are working will remain at the site two weeks at a time and will reside in a permanent 250 employee camp. Mill or surface workers will work two weeks on and two weeks off. Those

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working underground will work shorter shifts and will be onsite for two weeks with one week off.

5. Concerns over housing have taken two forms: problems in financing new construction or purchase and a limited inventory of currently available and affordable housing. CBJ figures indicate that the land and infrastructure is available for 3000 new units ranging from high density to single family. Every knowledgeable source the Committee has questioned on this matter indicate that the problem has been overstated and that financing for both development and purchase would occur as the justification arose. Concerns over lagtime could be offset to a large degree by the serious interest of communities such as Haines to compete as the place of residence for Mine employees.

C. Suggested DEIS corrections and clarifications

1. The comment that "The demands for chemical dependency treatment services may be higher for the Mine related population than for the current population" is qualified through the use of the word "may". There is little justification for the existence of this statement given that the Mine would have a drug testing program and would not hire or retain employees who have a problem with substance abuse.

2. The DEIS on Page 4-67 refers to the fact that there was no noticeable increase in crime rates during the construction of the Greens Creek Mine. The Committee is therefore puzzled by the statement that a 5% increase in population requires a 5% increase in police services. While the Committee recognizes the obvious correlation between population size and the size of the police force, it also knows that increases and decreases in the demand for public services do not occur on a one-to-one basis, i.e. the addition of one citizen in a community of 30,000 does not result in an increase of one thirty thousandth in the cost of street maintenance.

3. DEIS Section (see Page 4-68) is more generally reflective of the problem the Committee had with the language dealing with police services. The Committee would strongly recommend that this section be revised to reflect a program by program analysis based on a range of population figures.

4. In general, the Committee is uncomfortable with the use of a simple multiplier to project costs. Program costs do not increase or decrease in some simple linear fashion or in increments of 1.

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The affordability of housing construction or purchase is largely determined by the willingness of financial institutions to support such investments in a market that has proven to be quite volatile in recent years. The purchase of homes has been discouraged by the lack of private mortgage insurance available in Alaska, which necessitates a large cash reserve for a down payment (20 percent). Home building costs in Juneau are increasing due to more extensive regulation (The McDowell Group, 1990b). In response, housing pressure has shifted to the rental market. As noted on page 4-66 of the DEIS, most of the demand during the first two years of the mine's construction phase will be for rental units. The immediate impact will be for 239 rental units, 84 units greater than the most optimistic estimate of current Juneau rental vacancies.

According to Haines residents, the rental market does not fill the current level of demand and newcomers are offering rewards for notification of housing opportunities. Thus, the tight rental market in Haines (McDowell, 1990d) does not offer a means to offset the immediate shortage of rental housing during the construction phase of the Kensington mine.

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The statement and all references to it have been removed from the FEIS.

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The five percent increase is listed as an upper bound used to estimate the need for additional staffing in the JPD. It is based on the assumption that the influx of population will closely resemble the existing population base and, therefore, have similar needs for police protection. A one-to-one ratio of police protection to population change is neither possible nor realistic given physical and budgetary limitations and the percentage figure used in the DEIS is not intended to imply such a relationship. The statement will be reworded to clarify its meaning.

99.57

The need for expansion of several CBJ facilities and services has been acknowledged. Planned expansions are a consequence of current population levels and no expansion or construction is projected to be directly related to the Kensington project. Using a range of population figures would not change this basic assumption about major capital investments. Please see response no. 99.58 for a discussion of operating expenditures.

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VI. CONCLUSION

The Committee believes the DEIS analysis of socio-economic impacts of the Kensington Mine DEIS could be improved by considering a range of new permanent residents accruing to the CBJ. The DEIS has not adequately explored the potential the Mine offers to help solve unemployment problems for Angoon, Hoonah and Yakutat nor does it address how the Mine could help stabilize the Haines economy. The Committee from a socio-economic perspective sees no reason why the Kensington Mine should not be allowed to be developed.

99.58

Capital improvements are generally built to serve large increments of population change. Although several major capital projects are currently required in the community, none were directly related to the proposed Kensington development. Therefore, no capital investment expenditures have been included in the per capita cost figures reported in the FEIS. A study done by Erickson and Associates (July 1991), suggests that per capita spending increases with population growth. But, attention is drawn to the fact that the large sum of oil revenue available during the study period may have induced inflated levels of spending. It is apparent that the historical data provide no clear trends from which to predict future expenditure patterns. As costs are still being analyzed by the city, there is presently no better information than current per capita operating expenditures on which to approximate the increased costs to the City from development of the Kensington mine.

99.59

The DEIS analyzed the scenario supported by the design of the applicant's proposal including the provisions for transportation of employees from the Juneau location. In the absence of data representative of individual preferences, it is possible only to analyze those aspects of choice for which some value can be attached. Several factors support the conclusion that the majority of the Kensington work force will live in Juneau. First, economic criteria suggest that the most monetary gain can be achieved by those living in Juneau. Second, the economic base of the communities referred to has traditionally centered around the wood products and commercial fishing industries, fostering the associated occupational mix. Third, the lack of available rental housing in Haines diminishes its attractiveness for relieving an immediate impact to the Juneau rental market. In the absence of intent of the applicant to provide housing or monetary incentive for employees to reside in other communities, it is reasonable to assume that the majority of mine employees will come from outside southeast Alaska and reside in Juneau.

CONSOLIDATED COMMENTS AND FINDINGS

Substantive Matters

I. **AIR AND WATER** - The Committee has reviewed the "Identification of Preferred Alternative" and the Forest Service's recommended changes on page 2-48. The Committee believes two of the three Forest Service recommendations will have adverse impacts from an air and water perspective:

A. Placing rip rap in the channel to return flows to Sherman Creek (from Alternative C) would actually increase maintenance. No discussion was given about the size of rip rap in relation to stream flows. The Committee believes the size of rip rap required would exceed that which could be provided within the immediate vicinity and that it may have to be imported which may have significant economic consequences. In any event more maintenance will be required for rip rap as opposed to concrete lining. This will result in more adverse disturbance of stream flows over the life of the Mine.

B. The Committee believes the electric generator noise is not a compelling factor for the movement away from the camp and Mine entrance and, yet, as the charts on pages 4-81 and 4-83 indicate, dBA levels are not impacted regardless of where the generators are placed. By requiring the generators be moved from the Mine entrance, waste heat would not be available to heat the camp and the Mine. Therefore, additional electric energy or some other heat source such as oil, LNG or LPG will be required to replace this lost heat. The Committee believes emissions from the electric generators at the Mine entrance or elsewhere will be well within required standards, but the impact on air quality of locating the power plant at the entrance will be less. The DEIS should address the difference.

II. FISHERIES

A. Move the tailings pond effluent outfall pipe south to Point Sherman or below it. This would improve natural mixing due to the tidal action. It would get the pipe out of the prime commercial fishing and sometimes congested anchorage area. This would reduce the chance of anchor fouling and move the mixing zone out of the possible fry retention area of the eddy swirl north of Point Sherman.

B. Conflicts between the Mine related marine traffic and the fishing boats could be a major problem due to the high density of fishing vessels during openings. The actual plan of how the Mine is going to address the traffic conflict needs to be spelled out exactly in order to see if it would be acceptable and workable for all concerned parties. If it is not possible to have the plan in its final form, then at least the guidelines that the traffic

plan will follow need to be made public. There may need to be included an on-going review process of the traffic plan so as to take into account changes in opening times in the future of the commercial fishery. This item is of extreme importance to the fishing fleet.

- C. From the Committee's perspective Alternative B discussed on Page 2-33 would have the least impact on the fishing industry.

III. OPTIONS

- A. Review the necessity of requiring the Applicant to move the power plant from the Permanent Camp to tidewater.
- B. Review the necessity of requiring the Applicant to move the mineral grinding mill underground.
- C. Fully develop in the EIS the State Creek road alternative.
- D. Re-evaluate the Forest Service's preferred tailings dam spillway to an earthen concrete spillway.

IV. SOCIOECONOMIC

- A. The Committee believes a range of scenarios to assess the socio-economic impact of the Mine is warranted. However, by utilizing the Berger/ABAM Report as Scenario B tends to add validity to it when it has yet to be accepted by the CBJ Planning Commission. Eliminate reference to and use of the Berger/ABAM Report in the DEIS.
- B. Address the positive impacts which the Mine could have on the high unemployment levels for Skagway, Yakutat and Angoon. Also discuss Hoonah unemployment and the lack of employment stability in Haines caused by the erratic operating record of its sawmill.

Subjects which should be addressed/expanded in the Final EIS

I. AIR AND WATER

- A. Additional treatment of cyanides was lightly discussed, but no specifics were outlined or defined as a potential problem.
- B. Stormwater discharges were not noted.

II. FISHERIES

- A. An exact drawing of where the tailings pond effluent outfall pipe will be located should be shown in the Final EIS. There is concern about anchors fouling on the pipe. The location and depth of the outfall pipe should also be shown. Again, this area is used as an area for fishing vessel anchoring during southeast winds.
- B. More alternatives for the types and designs of the diffuser on the outfall pipe should be included in the Final EIS. This may suggest better (smaller) mixing zone characteristics.
- C. Deeper effluent outfall line alternatives should be shown along with the possible effects on halibut and crab.
- D. A specific plan for Sherman Creek water make up for winter low water periods should be included in the Final EIS. What can be done to minimize the impact on the eggs and fry?
- E. There should be discussion concerning the effect on fry that may stay in the Point Sherman eddy swirl for long periods. Do the fry actually spend much time there and would Mine or tailings related chemicals in the effluent adversely impact them.
- F. There needs to be current and pertinent water sample data. The water sample data, taken two years ago, came from too far out in Lynn Canal and may not represent conditions actually found closer in to the Point Sherman area. This information was taken when marine discharge of the tailings was under consideration and was really too far out in Lynn Canal to be necessarily valid. New samples should be taken.

III. OPTIONS

- A. Under electric energy sources discuss the option of extending a transmission line from the end of the Alaska Electric Light and Power Company facilities in order to utilize excess hydroelectric energy currently available from the Snettisham Hydroelectric Project.

B. Discuss the practicality and feasibility of constructing a VFR (visual flight rules) STOL (short takeoffs and landings) airport at the Mine to be used as a transportation alternative by Dehaviland Otter, Beaver and Cessna wheel type aircraft.

C. In concurring with the helicopter mode of transport from Juneau to the Mine, the Committee finds the DEIS does not discuss

1. If the helicopter leaves from the City and Borough of Juneau (CBJ) airport, where and how do company and workmen park their cars and/or busses?

2. Does the CBJ airport terminal have the capacity to handle the additional population and helicopters associated with the Mine?

3. Will a private carrier build a rotor-wing facility at the CBJ airport to accommodate this proposed air traffic and will it have parking?

D. The DEIS does not address the possibility of bussing workmen from one or more central points within the CBJ to a point at the end or near the end of Glacier Highway for air transport to Mine.

1. If such a bus/air transport route is utilized, will a heliport/parking be constructed on private lands (individual landowners, or native corporation lands) or will it be constructed on CBJ or Forest Service leased and privately owned lands? Is land available for this use?

2. If there is such a bus/helicopter mode of transportation from the end of Glacier Highway, who will maintain the road in winter time snow conditions?

E. The DEIS does not address the possible transport (by helicopter) of workmen/women from Haines to Kensington.

IV. SOCIOECONOMIC

A. The Committee believes that a more careful analysis of the range of potential impacts could do much to resolve questions in the section on socio-economic impacts. The Committee does not dispute the information on the number of employees or the multiplier in terms of private sector support. It is recommended that the socio-economic impact be analyzed at 3 levels of Juneau based Mine employees: 100, 200 and 300. Although the Committee believes the EIS should consider the worst impact for the CBJ, it recommends that EIS use the mid-range figure of 200 as the upper limit for reasonable projections.

B. The Committee strongly recommends that missing information be included in the final EIS explaining the initial and final makeup of the

work force, and the potential that a significant portion of these employees may actually reside in other communities--most notably Haines. With current and projected employment problems in fishing and timber it would seem reasonable to the Committee that employment at the Mine will be attractive to many who currently reside in other Southeastern communities and who wish to retain their residence in those communities.

C. Lower housing costs and property taxes in their current domicile could very well help offset the cost of commuting. The housing and population section would be clearer if it was explained that the Mine is only 30 miles from Haines, that the bulk of the work force will be living during working hours in a permanent on-site camp. To be more specific, of the 340 employees only 20 of those will be required to live in Juneau. These are salaried office workers.

D. The Mine will operate with two shifts. At any one time there will be roughly 200 employees onsite and 100 offsite. Those hourly employees who are working will remain at the site two weeks at a time and will reside in a permanent 250 employee camp. Mill or surface workers will work two weeks on and two weeks off. Those working underground will work shorter shifts and will be onsite for two weeks with one week off.

E. Concerns over housing have taken two forms: problems in financing new construction or purchase and a limited inventory of currently available and affordable housing. CBJ figures indicate that the land and infrastructure is available for 3000 new units ranging from high density to single family. Every knowledgeable source the Committee has questioned on this matter indicate that the problem has been overstated and that financing for both development and purchase would occur as the justification arose. Concerns over lagtime could be offset to a large degree by the serious interest of communities such as Haines to compete as the place of residence for Mine employees.

Suggested DEIS corrections and clarifications

I. GENERAL ISSUES

- A. The DEIS is well designed and presented. To assist the reader with such a large document the addition of a table of contents would be helpful. In formatting the Final EIS, identification of the chapter title, in addition to the chapter number on each page is also suggested.

II. AIR AND WATER

- A. Page 2-2, center column: The discussion of alternative E envisions "temporary storage of tailings during wet weather". In Southeast Alaska, wet weather is more than a temporary situation. Some comment should be included in discussion of this alternative regarding the extent of wet weather and the cost of required storage in the dry pending the temporary termination of wet weather. This option is discussed further on page 2-11, although no discussion is included there of the extra amount of energy required to dewater the tailings and further, there is no discussion of the objective accomplished by the dewatering alternative. Why dewater tailings when they will be disposed of in Southeast's normal weather?
- B. Page 2-18, left column, under Sewage Disposal, 1st paragraph: There is a statement saying, "treated effluent is known as gray water". This is erroneous. The gray water is waste derived from showers, kitchen and laundry wastes only, without any introduction of wastes from toilets. This error should be corrected. Note that this error is repeated later on in the DEIS.
- C. Page 3-12, center column: The description of ground water resources should include an explanation of their shallow nature and the fact there is no existing use of the groundwater in this area and no potential future use of the groundwater in this area. These facts are significant in that they are not mentioned further in this report only. The potential for use of groundwater is the reason for the concern with groundwater quality in the first place.
- D. Page 3-18, right column: Figure 3-15 shows an outfall extending to a depth of 275 meters. It is the Committee's understanding that such a great depth is not required. There is no explanation why this depth was chosen. This depth appears, based on figure 3-16, that it is at the bottom of the trench. Figure 3-15 also should have a horizontal scale.
- E. Page 4-14, left column, bottom paragraph: The statement says, "Secondary treatment system must provide 30 mg/liter BOD and 30 mg/liter total suspended solids." This is not precisely the case. Those numbers are limits which must not be exceeded.

- F. Page 4-14, center column: The top paragraph indicates excess water would be treated and discharged through a marine outfall. There is no explanation as to the type of treatment to be provided.
- G. Page 4-14, right column: This paragraph states additional treatment would be implemented to reduce cyanide levels in tailings pond effluent. No discussion is included regarding the type of treatment.
- H. Page 4-15, left column, top sentence: This points out that xanthates break down readily to several constituents including hydrogen sulfide. This is a toxic gas with a density heavier than air. Perhaps some comments should be included regarding expected dissipation of hydrogen sulfide, that is, is this in a confined area or at the tailings pond?
- I. Page 4-22, center column: The discussion of groundwater hydrology should point out that the groundwater occurrence is shallow and not in an extensive aquifer and, furthermore, there are no present uses of groundwater in the area and no anticipated future groundwater uses.
- J. Page 4-23, right column, center paragraph: The statement says, "seepage from the tailings impoundment would result in 'subsequent groundwater contamination'...." Perhaps one should conclude at this point that there would be an "effect" and after further study, maybe one could conclude that the effect could constitute contamination.
- K. Page 4-25, right column, summary: This summary should also include the fact that groundwater resources in the area are minimal and there is no present or future foreseeable use of groundwater in this area.
- L. Page 4-26, left column, Marine Discharges: It is not certain that the NPDES permits specify the depth of the discharge. They certainly specify water quality standards and treatment level. It is more likely that the Alaska Department of Environmental Conservation would specify the mixing zone size, if one is allowed, rather than EPA through their NPDES permit.
- M. Page 4-27, left column, top sentence: It should be pointed out that the analysis included herein using a three-port diffuser is quite limited. A more extensive diffuser with multi-ports is much more common and a more likely design option by the Kensington venture. This comment also applies to the assumed discharge depth of 100 meters. It is entirely possible that a shorter outfall using a more sophisticated diffuser system could achieve the required dilution much more economically and still meet water quality standards and permit conditions by EPA and DEC.
- N. Page 4-33, right column, center paragraph: The paragraph states that the applicant would be required to have an approved Spill Prevention Control and Countermeasure Plan. That plan is required by EPA. In

addition, the DEIS should state that the DEC requires an Oil Spill Contingency Plan. Furthermore, recent agreements among state agencies have required that the evaluation for approval of the Oil Spill Contingency Plan include all the state resource agencies comments consolidated by the Division of Governmental Coordination in the Governor's Office and the issuance of a determination with consistency with the Coastal Zone Management Plan. Furthermore, the U.S. Coast Guard requires an Operations Manual for the transfer of oil from marine transportation to shoreline. The governmental controls in these four permits and approval for oil spill, control and oil handling is extensive and conservative.

O. Page 4-36, right column, 2nd paragraph: This paragraph describes extensive damage to eggs through freezing because of low water levels. This paragraph should also include a statement that the Department of Natural Resources and Fish and Game would not allow this to happen in so far as possible by control of withdrawals or diversions from the stream.

P. Page 4-37, center column, Spills: In addition to the SPCC plan, this DEIS should point out that DEC requires an Oil Spill Contingency Plan and U. S. Coast Guard requires an Operations Manual. Recent agreements require that DGC make a determination regarding the consistency of the operation with the Coastal Zone Management Plan.

Q. Page A-11, center column, Sewage Disposal: The statement that treated effluent is known as gray water is incorrect. Gray water is something different. This error should be corrected.

R. Page D-8, left column, Lynn Canal: The last sentence describes water treatment in a tertiary treatment plant through which domestic wastewater is treated. It is not believed the tertiary level of treatment is required since secondary treatment is standard. Some explanation should be included here. Perhaps it is intended that treatment for the industrial wastes is one of the levels of treatment not applied to the domestic sewage and perhaps that is the reason for indicating tertiary treatment.

S. Page E-1, center paragraph, last line: Perhaps one could expand this statement about other agencies, in reference to Alaska Department of Environmental Conservation, in their issuance of an oil spill contingency plan. Other agencies, such as Division of Governmental Coordination, DNR and DFG also comment and advise on the oil spill contingency plan. In addition, DGC makes a determination of the operations consistency with Coastal Zone Management plan.

III. FISHERIES - none

IV. OPTIONS - none

V. SOCIOECONOMIC

- A. The comment that "The demands for chemical dependency treatment services may be higher for the Mine related population than for the current population" is qualified through the use of the word "may". There is little justification for the existence of this statement given that the Mine would have a drug testing program and would not hire or retain employees who have a problem with substance abuse.
- B. The DEIS on Page 4-67 refers to the fact that there was no noticeable increase in crime rates during the construction of the Greens Creek Mine. The Committee is therefore puzzled by the statement that a 5% increase in population requires a 5% increase in police services. While the Committee recognizes the obvious correlation between population size and the size of the police force, it also knows that increases in public services do not occur on a one-to-one basis, i.e. you do not acquire 5% of a police officer to accommodate a 5% increase in population.
- C. DEIS Section (see Page 4-68) is more generally reflective of the problem the Committee had with the language dealing with police services. The Committee would strongly recommend that this section be revised to reflect a program by program analysis based on a range of population figures.
- D. In general, the Committee is uncomfortable with the use of a simple multiplier to project costs. Program costs do not increase or decrease in some simple linear fashion or in increments of 1. A \$30,000 annual sidewalk maintenance activity in a town of 30,000 does not become a cost of \$30,001 with the addition of one more person.

Southeast Alaska Conservation Council

SEACC 419 Sixth Street, Suite 328 Juneau, Alaska 99801 (907) 586-6042

August 30, 1991

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RANGER DISTRICT

Mr. Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, AK 99801

Dear Ken:

On behalf of the Southeast Alaska Conservation Council (SEACC), I submit the following comments on the Kensington mine draft environmental impact statement. SEACC is submitting these comments in addition to our comments filed through the Sierra Club Legal Defense Fund.

SEACC has closely followed development of the Kensington mine project and associated NEPA analysis over the past two years. We have made an honest effort to let the Forest Service know of our concerns, early in the process: SEACC staff has attended countless meetings, met individually with Forest Service officials, and submitted numerous written comments (to which we have never received a single written response). Despite these efforts to participate in the process, the majority of the concerns we have expressed have not been addressed in the DEIS. We are resubmitting our comments of the past two years as part of our official comments on the DEIS.

In addition, we offer the following comments.

In summary, we find the DEIS legally deficient, and request preparation of a new DEIS following completion of currently ongoing baseline studies, and additional baseline work that has been requested, in the marine and terrestrial environments. Despite repeated comments from SRACC and a host of public agencies, the Forest Service has insisted on rushing ahead with the DEIS before adequate baseline work had been completed [NOTE: baseline work on mountain goats and black bears is not nearly complete, and additional baseline work has apparently been conducted in the marine environment but was not used in the DEIS]. Without complete baseline work, impacts of the project cannot be adequately assessed.

Furthermore, the DEIS does not look at the full range of reasonable alternatives, and inappropriately eliminates several alternatives

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Discussions of baseline data adequacy have been ongoing throughout the EIS process between Forest Service/ACZ biologists and ADF&G/USFWS biologists. As a result of these discussions, numerous additional studies have been completed or initiated to address specific issues. In addition, numerous other sources of pertinent existing information have been identified and reviewed. As a result, some of the baseline adequacy issues raised by earlier agency or S&EACC letters or meetings have been resolved. However, some baseline adequacy issues have not been resolved because of differences in professional opinion regarding the level of baseline data required for an EIS level analysis of impacts for certain resources.

The focus of the EIS analysis has been to collect and evaluate data that is reasonably obtainable and that relates to important issues identified by the screening process. CEQ regulations do not require an exhaustive collection of superfluous baseline data for the EIS process when this information is not likely to modify the outcome of the impact analysis or be of any value in refining impact projections. Justification relating to how more baseline data would assist or modify the EIS analysis, for the most part, has not accompanied requests received for baseline data. Some of the requests for additional data, however, may have some relevance to long-term research for refining impact projections or developing project specific mitigation. The Forest Service would be receptive to discuss implementation of these types of studies as stipulations to the final Plan of Operations.

Many of the differences in opinion regarding the level of baseline data required for an EIS analysis have revolved around the potential effects of effluent discharge on water quality and marine organisms in Lynn Canal. For terrestrial wildlife, requests for additional information have been directed more toward a species specific approach of documenting existing conditions rather than an approach based on existing habitat conditions.

PELICAN FORESTRY COUNCIL. • FRIENDS OF THOMPSONS BAY, JUNEAU • WRANGELL RESOURCE COUNCIL. • SITKA CONSERVATION SOCIETY
 FALSE ISLAND KOOK LAKE COUNCIL, Tenakee Springs. • LYNN CANAL CONSERVATION, Haines • TAKU CONSERVATION SOCIETY, JUNEAU
 NARROWS CONSERVATION COALITION, Petersburg. • FRIENDS OF GLACIER BAY, GUSTAVUS • TONGASS CONSERVATION SOCIETY, KETCHIKAN
 ASKA SOCIETY OF AMERICAN TOURISTS DOW LIVES, Pelling Baker • JUNEAU GROVE SITKA CLUB • YAKUTAT RESOURCE CONSERVATION COUNCIL

Electrolyzed

With respect to terrestrial wildlife species and many aquatic organisms, projections of impacts may not be obtainable or accurate regardless of the level of baseline data collected. There are inherent difficulties involved in obtaining accurate wildlife population information and problems associated with attempts to project or assess impacts from inferred or observed population changes that are unique to a resource that can move and possibly adapt to disturbance activities. As a result, the evaluation of existing conditions and impact assessment for the EIS has focused primarily on habitats rather than species.

Various long-term and intensive studies developed to assess wildlife impacts and mitigation associated with the coal and oil shale industries in the lower 48 states have indicated that monitoring of many wildlife populations before and after disturbance activities generally cannot distinguish between observed effects attributable to natural factors or disturbance factors (Phelan et al., 1986)¹. This is especially true for species that migrate seasonally or have wide-ranging movement patterns. Monitoring of habitat disturbance and subsequent reclamation has become the preferred approach for assessing impacts and mitigation success for wildlife species, except in certain cases where species of special concern require more species specific approaches (Phelan et al., 1986).

The evaluation of potential marine organism impacts in the DEIS assumed that the operator must meet water quality discharge standards imposed by the EPA and Alaska DEC in the NPDES Permit. No permit would be issued or discharge allowed unless the operator demonstrates that these standards can be met. The Forest Service and ACZ fisheries biologists believe that sufficient information exists to evaluate impacts based on this assumption. Their analysis has shown that no measurable impacts are expected to occur to marine organisms (see DEIS pages 4-26 through 4-33). Specific data collection and species monitoring required by the Alaska DEC for the NPDES Permit will be used to evaluate impacts and determine mitigation if a project upset results in discharge of contaminants above the standards specified by the NPDES Permit. See also response no 93.2.

¹Phelan, T.M., S.R. Viert, and S.G. Long. 1986. Wildlife Technologies for Western Surface Coal Mining. Office of Technology Assessment, U.S. Congress, Washington, D.C. 183 pp. plus appendices.

with environmental benefits simply because of added company costs. Particularly given the fact that the Kensington area is designated "LUD II," to be managed in an undeveloped and roadless state, it is entirely appropriate for the Forest Service to choose alternatives with higher company costs if they can provide greater environmental protection.

Alternatives

We disagree with the Forest Service's selection of the applicant's proposal, with relatively few modifications, as the "preferred alternative." We do support the Forest Service's decision to place grinding underground, especially after a recent visit to the Greens Creek mine. However, the Forest Service has not given adequate weight to environmental considerations in choosing the preferred alternative.

SEAC supports the following project design:

- 1) Cut and fill or other mining method which is conducive to backfilling. The EIS inappropriately eliminates the cut and fill mining method due to economic considerations and the fact that it is "more labor intensive," but fails to weigh the environmental advantages of such a mining method.
- 2) Dry tailings disposal, as is currently conducted at Greens Creek, with surface disposal at site A of those tailings which could not be backfilled.
- 3) Backfill of tailings with concrete stabilization, as is currently conducted at Greens Creek. The DEIS fails to assess concrete stabilization and wrongly eliminates this option due to the proportion of fines in the tails. Greens Creek tailings have very high proportions of fines (85% of which are 400 mesh), even higher than Kensington (60% at 200 mesh), yet these tailings are dewatered and backfilled along with coarser tailings.
- 4) Full treatment of wastewater from the dry tailings or wet tailings impoundment, such that tailings effluent meets state receiving water quality standards at the end of the pipe. Technology exists for such treatment, but the DEIS fails to look at this option.
- 5) Further review of joint facilities with the Jualin project.
- 6) On-site mancamp with helicopter transport of employees from Juneau airport to heliport at Comet Beach. If the helicopter transport option is to be used, however, the flight path should stay near Lynn Canal, stay out of Berners Bay, totally avoid sensitive goat habitat at the project site and elsewhere, and be restricted to travel on weekdays. We strongly oppose the concept of a road and marine terminal out on Echo Cove. We appreciate the company's effort to avoid impacts on Berners Bay.

100.2

The Forest Service has studied the alternatives in the EIS based on NEPA criteria. The analysis is based on the description of environmental effects found in Chapter 4.

100.3

Please see Chapter 2 of the FEIS for an expanded discussion of mining technique selection. There seems to be some ongoing misconception about the advantages of cut and fill mining over the open stoping methods proposed by the Kensington Venture. Please remember that even with the use of cemented backfill, only about 50 percent of the tailings can be returned to the slopes. If one assumes that the project will ultimately mine 20,000,000 tons of ore, then somewhere around 10,000,000 tons of tailings would still need to be placed on the surface. Such a disposal requirement is not trivial. A tailings site of this size would still have the visual, wildlife habitat, long term reclamation and maintenance concerns that have been identified for the tailings disposal sites evaluated in the DEIS.

100.4

The question then becomes: Would the reduction in impacts from implementing cut and fill mining be large enough to warrant requiring the Kensington Venture to implement this method? The only differences are small reductions in disturbance area - no environmental concern is eliminated by this method of mining. Thus, the Forest Service does not consider the environmental gain to warrant further consideration.

100.4

Comment noted.

100.5

Please see Chapter 2 of the FEIS for additional discussion of mining method selection.

100.4

Comment noted.

100.5

Please see Chapter 2 of the FEIS for additional discussion of mining method selection.

ADDITIONAL COMMENTS

Baseline studies

As the attached comments describe in detail, baseline studies of the marine and terrestrial environments are woefully inadequate. Though additional marine studies have reportedly been conducted, these have not been released for review and have not had any influence on the DEIS. Thorough studies, as requested by numerous public agencies, should be conducted prior to release of a new draft EIS. As we warned repeatedly in earlier comments, the very basis of the draft EIS is faulty without the comprehensive studies of marine biology, wildlife, fish, oceanography, bird life, recreation, and other parts of the affected environment that have been requested for the past year and a half.

Water quality/mixing zone

Impacts of the project on marine water quality and marine life are inaccurately described in the EIS. The EIS almost completely neglects the effect of the fuel/barge marine terminal on this shallow, productive, and important nearshore area of Lynn Canal. Combined with the lack of baseline information on currents and species presence and timing in this area, project impacts on the nearshore area are inadequately considered in the DEIS. The DEIS fails to assess the chronic small spills that accompany all mines and marine docking facilities, as well as to adequately assess the potential impacts of larger spills. It also fails to evaluate impacts of excavating the proposed barge ramp.

Mixing zone. The mixing zone has been misrepresented as a "treatment facility" that can be carefully controlled and regulated. As the experts well know, the bulk sampling upon which the effluent pilot study is based almost certainly does not reflect the full variability of heavy metals in the ore body. Effluent levels are almost certain to exceed even the "low flow" levels depicted in table 4-11. These levels, by the way, are well below the levels predicted in the HDR July 1990 Kensington mine water supply and water management plan which states that "pilot plants typically produce slightly better results than full scale mill or treatment works. In many instances, key parameters typically exceed pilot test data by factors ranging from 2-5 or more," (p. 55 of HDR) far greater than the two standards of deviation used to calculate the low flow estimates. History more than bears this out -- virtually every mine has trouble controlling its effluent discharge, including Greens Creek, Red Dog, and numerous mines up and down the west coast. The EIS should have presented this variability and the likely frequency and extent of wastewater effluent exceeding predicted levels, meaning greater toxicity in the mixing zone, and a bigger mixing zone. As just about anyone involved with the mining industry will freely admit, each mine is a dynamic case, with endless tinkering and changes in milling and

100.6

Please see response no. 86.4.

100.7

Please see Chapter 2 of the EIS for a discussion of joint facility use.

100.8

The helicopter option proposed by the applicant and studied in the FEIS incorporates all the attributes you mention.

100.9

Please see responses no. 5.2 and 100.1.

100.10

Expected impacts of constructing and operating a barge landing slip and a fuel transfer station were described on pages 4-33, 4-34 and 4-35 of the DEIS.

Construction impacts are expected to be localized in extent and of short duration. The most significant impact from such activities would be displacement and loss of intertidal animals at the site of construction, which would be relatively small in scale.

The FEIS includes additional information describing how impacts can be minimized by restricting construction and fuel transfer activities to specified time periods. Additional language is added to the FEIS to more fully describe expected impacts of these actions (see Chapter 4).

100.11

The "mixing zone" only allows for dilution of the effluent prior to entering the unrestricted environment. The mixing zone should be considered a place where effluent mixes with its receiving water and not in a sense as a true method of effluent treatment (constituent removal). The mixing zone is, however, a defined area or volume of the receiving water surrounding or adjacent to the point of discharge, where even though the point discharge may not satisfy all applicable water quality criteria or standards, sufficient dilution is provided within the mixing volume to satisfy the necessary ambient water quality criteria. The mixing zone, in this area, serves essentially the same function as if water from the receiving waters were diverted into the discharge from the tailings pond and allowed to mix within the ocean outfall pipe prior to emptying into Lynn Canal. The use of a mixing zone is a statutory issue that requires ADEC and EPA concurrence as part of the NPDES permitting process.

100.13

100.14

water treatment to maximize mineral extraction, and to minimize effluent levels.

The DEIS should fully depict this variability, so that fishermen and others are adequately informed of potential impacts of the mixing zone. SEACC strongly believes that this sort of experiment -- and a mixing zone is an "experiment" -- is not appropriate in a place like Lynn Canal, particularly in such close proximity to a major gillnet fishery, a renewable industry which will continue to support Southeast's economy long after the mine is gone.

The DEIS also should depict the total inadequacy of existing monitoring and compliance enforcement at ensuring that mining effluents do in fact meet permit levels. If Greens Creek is any indication, when there are violations of marine effluent levels, it will take weeks or even months before any regulator even knows about the problem. Once violations are discovered, let's admit that if Kensington does exceed its permit levels, it is extremely unlikely that regulatory agencies will have the resources to quickly and effectively correct, or force Kensington to correct, the problem.

One final note: it was disconcerting to hear Forest Service and its consultants, who are supposed to represent the public, stand up one after another at the hearings and workshops and aggressively defend the company's proposal for a mixing zone. As numerous Haines and Juneau residents said to me following these sessions, not once did a Forest Service or ACZ consultant acknowledge that yes, effluent levels in a mixing zone do exceed state standards, and at times a mixing zone will not work as planned and the plume will have a greater concentration of heavy metals and cyanide than even the low flow numbers suggest.

Tailings dam and size of ore body

There appears to be a great discrepancy in the size of the ore body and capacity of the Sherman Creek tailings dam and impoundment between the Final Scoping Document (FSD) and the EIS. The FSD calls for a tailings dam that will hold a maximum of 20 million tons, be 240' high, with max elev. of 680 feet. The DEIS calls for a tailings dam that will hold 30 million tons, be 270' high, and also have a max. elev. of 680 feet. Furthermore diagrams of the dam and impoundment are identical in both documents. Where does the extra 10 million tons and 70' of dam elevation fit in? Will the dam and pond be larger at max. capacity than the diagrams depict?

The Forest Service also has made an unexplained change in terminology between the FSD and DEIS, from an "upstream design" to a "modified centerline." The modified centerline appears to actually be a "modified upstream" design, which is absolutely inappropriate for this site. We request an independent review of the dam design if the Forest Service persists in its recommendation of wet tailings. Also, the lack of an impermeable liner is

The second issue raised by this comment, regarding the consistency and validity of the applicant's bulk sample derived water quality characteristics is a reasonable concern. Obviously, a mineral sampling program is designed to provide as accurate data as possible by statistical interpretation. Without good information the success and feasibility of the applicant's project are impossible to assess. However, in sampling an ore body, variations in mineralogy are expected. Some ore bodies have a significant amount of variations others have been shown to be very homogeneous. The potential ore variability of the Kensington ore body has been specifically evaluated based upon the applicant's need to verify the feasibility of the material for milling and other economic purposes. According to the available data (Kirkham, 1991) the actual mined ore characteristics should closely duplicate the bulk sampling results. While it is indeed impossible to predict the actual variations in effluent water quality that could result from variations in the mineralogy of the ore body based solely on the laboratory tests, they provide the best information for characterization of the effluent in order to base the analysis of potential water quality impact and mitigation measures.

The specific concerns the commenter has regarding the Greens Creek project provide a good opportunity to discuss contingencies available to the Kensington project in the event that mill effluent quality does not conform to the projections. Greens Creek ore has been shown to have a great deal more copper variability than anticipated. The mill effluent has had a higher copper and lead effluent level than projected during planning. Consequently, in response to this problem, the company installed a mill effluent water treatment plant in 1990-1991 to further reduce the metal cyanide complexes in the effluent and precipitate and settle, for stabilized disposal, copper and lead precipitates prior to piping the treated effluent to the storage pond which discharges to Hawk Inlet. The full scale project was successful in reducing the level of copper and lead to levels better than achieved in bench scale testing. The same retrofit options will be available to the Kensington project in the event that the concentration of regulated pollutants exceed the projected values and additional parameter specific treatment is necessary. It is the applicant's responsibility under law to satisfy all water quality criteria defined under its NPDES Permit.

100.12

A large effort to improve the predictions for the FEIS has rendered many of the conclusions in HDR (1990) obsolete.

100.13

The FEIS presents the most accurate estimate of expected water quality that can be developed until the project begins running and operating data are available. Please see the revised discussion of water quality in Chapter 4.

100.14

Comment noted. The effects resulting from altering or refining process procedures cannot be anticipated or identified, therefore NEPA can only consider the processes proposed. If the project is approved and goes into operation under approved permits, any alteration or refinement to procedures would be required to meet permit stipulations.

100.15

Mixing zones are well established in Alaskan regulatory practice. The Forest Service does not have the authority to approve or disapprove a mixing zone. This authority is provided under EPA and ADEC regulations.

The FEIS has included an additional alternative which uses enhanced water treatment and locates the marine outfall south of Point Sherman in order to further assess potential impacts and address public concerns.

100.16

The Forest Service is actively working with EPA and ADEC to develop a monitoring plan that will improve regulatory oversight of the Kensington Project. Chapter 2 of the FEIS includes revised management, mitigation and monitoring objectives.

100.17

At present, the reserve estimate for the Kensington Project is approximately 12 million tons. The proponent has estimated that the reserve could expand to as much as 20 million tons. To allow for additional reserve expansion the EIS evaluates sites capable of handling up to 30 million tons of tailings. This will allow for considerable growth in reserves or sharing of facilities giving the sites evaluated in the EIS flexibility. The dam height needed for the 20 million ton case is 240 feet. The 270 foot dam height allows for the 30 million ton case.

100.18

Terminology was switched from the Final Scoping Document to the DEIS because the "upstream" design term used in the Final Scoping Document was incorrect. As part of the State Dam Safety Program an independent dam safety evaluation has been undertaken. The results of this evaluation are being incorporated into the final dam design.

100.19

The impermeable core is needed for structural stability of the dam. It is not intended to function as a liner.

100.20

The PMF was used as the design event for tailings pond containment.

inappropriate. The so-called impermeable layer in the dam is not impermeable at all. A liner is critical.

We request an explanation and comparison of the Probable Maximum Flood (PMF) with the 10-year and 100-year floods. We strongly doubt that the proposed Sherman Creek pipe, Ophir Creek diversion, and dam itself can handle all flood events likely during the life of the project and in the future before the tails have settled and this should be explained in EIS.

The description of long-term maintenance costs for the dam and creek diversions also has not been adequately addressed.

Avalanches

Echo Bay's own avalanche analysis (p. 3) shows that the Ophir Creek avalanche path, which terminates at the 650' level, would cross not only the Ophir diversion, but also would enter the tailings pond when it nears maximum capacity (680' elevation). The impacts of avalanches into the tailings pond and associated facilities are not adequately addressed in the DEIS.

Attached are some page specific comments as well as previous comments which we ask be made a part of SEACC's official comments on the DEIS. We request that you respond in writing to these attached comments as well as to the above comments.

Thank you for this opportunity to comment.

Sincerely,

Chris Finch

Chris Finch
Assistant Director

100.21

Please see response no. 7.5.

100.22

Please see discussions of avalanche hazards presented in the Geotechnical Considerations section of Chapter 4 (DEIS and FEIS). This section discloses that it is possible, but unlikely, that an avalanche could extend beyond the historical slide zone and block a portion of the Ophir Creek diversion. The tailings dam design criteria allows for safe containment of potential high flow conditions from Ophir Creek.

100.23	S-11 "Sedentary organisms living within these sediments could be expected to bioaccumulate certain metals." This is a direct violation of 18 AAC 70.032, which explicitly prohibits discharge of substances which have the potential to bioaccumulate.	100.23 The State of Alaska commonly allows discharge of substances that can bioaccumulate. The issue, however, is to what extent and to what effect, which is implied in the regulation cited. In the case of the proposed project, no measurable bioaccumulation is expected in organisms that are harvested by humans. While some bioaccumulation would likely occur in non-mobile bottom organisms residing for lengthy periods in the vicinity of the outfall, effects on these populations are expected to be negligible. Biomagnification of heavy metals to higher trophic levels feeding on those benthic organisms is not expected. A more detailed discussion of this matter is provided in Kessler and Vigers (1992).
100.24	2-12 "Excess water from the pile, accumulated as a result of net precipitation buildup, would be discharged from the holding pond via a marine outfall in accordance with an EPA administered NPDES Permit." This statement, which is concerned with drainage from Alternative E's dewatered tailings pile, leaves the following questions unanswered: What is the expected water volume based on annual precipitation averages? How will the concentrations of heavy metals and cyanide in the runoff differ from the concentrations found in effluent from a tailings pond? Will trace cyanide surviving the cyanide-destruct process be more or less likely to persist in a dewatered tailings pile than in a tailings pond?	100.24 Knight and Piesold have estimated that the runoff from the dry tailings disposal site (A or B) would average 467 gallons per minute, based on 80 inches of rainfall and 17.14 inches of evaporation at the site each year.
100.25	2-48 "Scheduling of barge traffic to Kensington around fishing openings, to the extent practicable, would minimize conflicts with commercial fishing." Who, and what factors, will determine practicability?	100.25 We have assumed that this question refers to the difference between the runoff from the placement of dry tailings (Alt. E) versus the discharge from the proposed tailings impoundment (Alt. B). Please see Chapters 2 and 4 of the FEIS for additional discussion of Alternative E.
100.26	2-50 Table 2-5, Comparison of Impacts The Fisheries section of this table considers only the relatively minor fisheries of Sweeney and Sherman Creeks. No summation of the potential for adverse impacts on the Lynn Canal salmon, bottomfish, and crab fisheries is presented. Is this because the potential impacts are too numerous to synopsise in such a table??	100.26 Please see additional discussion of dry tailings effects in Chapter 4 of the FEIS.
100.27	4-19 "An annual program for the maintenance of constructed channels, and erosion measures may be required in perpetuity after mining is terminated." What perpetual financing is contemplated for this maintenance?	100.27 Please see response no. 99.24.
100.28	4-19 "Failure of the spillway would cause erosion of the surrounding drainage area and underlying materials, headcutting and increased sedimentation in Sherman Creek until a new channel becomes established and stabilizes over time."	100.28 The analysis has not identified any significant impacts to fisheries in Lynn Canal. However, the FEIS has included an alternative which locates the marine outfall south of Point Sherman in order to eliminate potential conflicts with commercial fishing concerning net and anchor fouling.
100.29		100.29 Please see response no. 7.5.
100.30		100.30 The discussion you refer to has been modified in the FEIS. The confusion results from the omission in the DEIS of qualifying statements. The discussion was intended to refer to the expected effects in the absence of long term maintenance.

100.31

The mixing zone will not change with season, tide or discharge volume. If allowed, it would be a specific three dimensional zone around the diffuser. This zone will be geographically fixed. Alaska water quality standards will be met everywhere outside the mixing zone.

For additional discussion of plume dynamics and available studies see response no. 100.32.

100.32

Chapter 4 of the FEIS expands on the analysis of plume characteristics presented in the DEIS. See also the support document Kessler and Vigers (1992) if a more complete technical account is desired. Since currents will improve diffuser performance above that projected in the DEIS, there is little to be served by including this variable in the analysis. However, currents will deflect the discharge plume from its normal (zero current) trajectory somewhat. While this will have no significant negative effect on the size and shape of the mixing zone, it does have important bearing on compliance monitoring since it affects the location of the edge of initial mixing (see response 117.192). This is an NPDES issue and hence its discussion is not included in Chapter 4 of the FEIS or in the supporting documentation.

100.33

Assuming the comment refers to residual heavy metals in the effluent discharge to the ocean mixing zone, precipitation is again controlled by the reaction kinetics. In freshwater these are primarily related to pH and the availability of anions in the solution as described in the response to comment 100.6. This is somewhat more chemically complicated in a marine environment, but the process is essentially the same. Significant additional precipitation in Lynn Canal would not be anticipated, however, flocculation of the particles already formed could be expected. The alkaline chlorination process provides generally ideal conditions for hydroxide metal precipitation. Any re-dissolving of metals occurring in the tailings pond, due to the lower pH, would not result in significant additional reprecipitation in the mixing zone due to the similarity in pH. Based upon the effluent quality predictions, the concentrations for all parameters are generally so low that the solubility would not be exceeded regardless of the cation concentration, and significant additional precipitation in the receiving water would not be expected. Some organic and inorganic adsorption and solids accumulation will take place within the mixing area, however, the concentrations are generally so low that monitoring and analysis in the marine environment would be difficult, if not impossible.

Given that the new channel will be establishing itself through the tailings pile, it seems that "increased sedimentation" is a remarkable understatement, given the fine granularity of the tailings. Has any modeling been done to estimate the time to stabilization and the amount of mass likely to be displaced for various potential spillway failures?

4-26 A discussion of the environmental consequences for marine resources begins here. The discussion is very specific about many points, yet overall it fails to present a clear description of the effects of the proposed discharge. Questions left unanswered include:

How does the size, shape, and orientation of the mixing zone vary with seasons, tides, and discharge volumes? This information is critical in order to establish which fish habitats may be impacted by the discharge. There is no evidence within the DEIS that modeling of the plume characteristics beyond the zero-current case was conducted. While the zero-current case is indeed the worst-case scenario for dilution, it also is a simplification of actual conditions. What modeling has been done of plume dynamics in more realistic scenarios?

What percentage of the heavy metals in the effluent will precipitate out upon mixing and what percentage will remain in solution?

Given that there is a net up-canal movement of saline water at depth compensating for the net seaward movement of fresher surface water, will sediments emanating from the outfall accumulate up-canal? If so, what impact might this have on the Pacific cod fishery in the Sullivan Island area?

What additional contaminants will be introduced into the effluent as a result of TSS-mitigation techniques? Apparently the mitigation technique to be used had not been determined at the time that the DEIS was published. What chemicals are being considered for reducing suspended solids, and what are their likely impacts on biota?

Are statements such as "Time spent within this area would pose no threat to the health of these animals [zooplankton] because of the very short duration of exposure" (p. 4-30) hypotheses or have they been experimentally verified? This section of the DEIS is particularly rife with such statements. If these matters have in fact been subjected to scientific investigation why are no citations for the relevant work given?

Finally, the mixing zone is considered to be that region in which EPA-mandated water quality standards are not met, and this definition is certainly within the letter of the law. The DEIS would provide a greater public service however, if it also attempted to quantify the total region in which concentrations of dissolved metals resulting from mine effluvia are greater than current ambient levels.

4-28 "The effluent stream is characterized in Table 4-9, Estimated Water Quality for the Mill and Tailings Impoundment Effluent under the column entitled Combined Tailings Pond Discharge Water Quality."

100.34

A detailed analysis of wastewater particulate deposition patterns is presented in Chapter 4 of the FEIS and in more detail in the supporting document Kessler and Vigers (1992). This analysis is based on currents measured in Lynn Canal over a 260 day period (over 25,000 observations spaced over 15 minute intervals between September and June). This current time-series spans all the significant variability in tidal currents and in the secondary seasonal modifiers such as river driven estuarine circulation, seasonal wind-driven circulation and water column density distribution effects. Thus the deposition analysis includes all important persistent current effects.

100.35

No additional chemical addition for settling has been identified as being anticipated for the applicant's proposal in the DEIS; however, Alternative F presented in the FEIS does describe the options available for treatment of both the cyanide circuit and the tailings pond effluent that would involve the use of treatment chemicals (polymers, lime, etc.). The use of environmentally compatible settling aids and polymers is quite common. These chemicals are used in such low concentrations that environmental impact is normally not a consideration. Almost without exception, domestic water treatment relies on the use of natural and synthetic polymers, lime and ferric, to enhance settling and filtration. Residuals of these chemicals occur in the final finished water without significant concern for human health. Some natural organic polymers, such as, sodium alginate, a compound extracted from brown seaweed and chitosan, obtained from crab shells, show promise and have been used in other countries as environmentally degradable coagulants, but costs are currently very high compared to synthetic polymer.

100.36

The exposure time of zooplankton is based on the knowledge that these animals are of essentially neutral buoyancy and would, if they became entrained in the rising plume, travel with the rising plume. The estimate of time spent in the plume is then simply a matter of knowing the rate and height of plume rise.

100.37

FEIS Chapter 4 gives estimates of total mixing zone volume.

100.38

The columns you are looking for are titled "Average Pond Effluent" and "Low Flow Pond Effluent" in the DEIS. The table has been re-formatted in the FEIS.

100.39

The marine discharge from conventional tailings disposal versus dewatered tailings disposal (Alternative E) differs in that there is a larger area of undiverted runoff for the conventional system. The dewatered option would have a lower average annual discharge as follows:

- Conventional disposal	- 2961 gpm
- Dewatered tailings	- 1442 gpm

Since water quality will be controlled by federal effluent limitations and State water quality standards through the NPDES permit process, marine discharges for conventional or dewatered alternatives would be similar. Effluent quality will be controlled by technology based treatment that would be required at times for both systems producing similar effluent concentrations for discharge.

100.40

Water retention in the tailings pond would also be controlled with a valved decant system. The system described consists of a decant structure designed to discharge water in excess of the design water volume from the surface of the retention pond. A valved decant is a structure that can be regulated (opened or closed) to maintain design water retention in the pond. The structure has an inlet riser that controls the surface elevation of the water in the pond. With this design there is no open uncontrolled pathway for cyanide to enter Lynn Canal.

Unfortunately, this very significant column does not appear in Table 4-9.

4-36 "Potential impacts associated with marine discharges from the project would be essentially the same under all action alternatives."

Is this true for Alternative E (dewatered tailings)?

Part F, Hazardous Material Handling Plan, p. F3
In the discussion of the facility design for containing cyanide spills, it is stated that: "An emergency decant valve will also be installed such that any unusually high volume of decant could be discharged directly to the tailings pond for containment." This is alarming. The tailings pond by and large does not contain liquids, it contains tailing solids. An unspecified portion of the water is pumped back to the mill for reuse in processing and the rest is free to enter the marine discharge. This means that there exists by design a pathway for cyanide to enter Lynn Canal untreated. This design must be re-examined.

M.A.C. • P.O. Box 021692 • Juneau, Alaska 99802 • (907) 586-6942

April 14, 1991

Mr. Roger Birk
Kensington team leader
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Roger:

Here is a summary of my basic concerns regarding the marine (nearshore) baseline studies on the Kensington project. I appreciated the opportunity to talk with you and Don Martin the other night.

We strongly believe that these problems need to be corrected. As the attachments to the enclosed memo indicate, numerous biologists have stated that the marine baseline work is fundamentally flawed.

There has been more than ample time to collect this baseline data, but somehow it has never happened. Forest Service meetings held last fall to discuss the adequacy of this baseline information revealed widespread concern over existing studies, as have subsequent agency comments. Instead of resolving this basic problem, the discussion has been shifted to "monitoring" studies, which are very different from baseline work.

As a result, the debate over baseline adequacy has never been finished, much less resolved. It is part of a much larger problem, one which is now threatening to recur with the Jualin project. I don't think that it can be forever shoved under the carpet. The Forest Service and Kensington Venture will avoid many future problems if they openly and honestly discuss baseline problems, and supplement existing studies, before the draft EIS is released. This has not occurred.

Thanks for this opportunity to comment.

Sincerely,
Chris Finch
Chris Finch

CC: Kensington Venture
U.S. Fish and Wildlife Service
National Marine Fisheries Service
Alaska Department of Fish and Game
Alaska Department of Environmental Conservation

PELICAN FORESTRY COUNCIL • FRIENDS OF BERNERS 94 • Juneau • UNGELL RESOURCE COUNCIL • SITKA CONSERVATION SOCIETY
FALSE ISLAND LAKES COUNCIL, Tenakee Springs • KLU CANAL CONSERVATION, Haines • TAKU CONSERVATION SOCIETY, Juneau

100.41

The Forest Service conducted baseline adequacy reviews in February 1991. Based on the findings of our professional staff, aided by the ACZ staff, we determined that the baseline was adequate to describe the effects of the alternatives.

Southwest Alaska Conservation Council

ME-400 • PO Box 21692 • Juneau, Alaska 99802 • 907-586-6942

Date: April 14, 1991
 To: Roger Birk, Kensington IDT leader, U.S. Forest Service
 From: Chris Finch *CAF*
 Re: Deficiencies in studies of Pt. Sherman fishery/marine environment for Kensington mine EIS

We believe that the Forest Service is moving ahead with a draft environmental impact statement (EIS) on the Kensington mine prematurely given the major shortcomings in the project's marine baseline studies.

Baseline studies are important because they provide the basis for: (1) predicting and assessing impacts of a project; and (2) monitoring the actual impacts of the project as it develops. According to numerous state and federal agencies, existing baseline studies are inadequate for either of these purposes. Despite their recommendations, the Forest Service is moving ahead with an environmental impact statement (EIS) on the Kensington mine, due out later this spring.

The rich Lynn Canal gillnet fishery is among the most significant and economically valuable resources that will be affected by the Kensington mine. However, the fisheries and general marine environment near Pt. Sherman have received much less study than other resources possibly affected by the project.

Impacts to the marine environment are among the most likely impacts which could occur as a result of the project. Forest Service documents discuss possible releases of cyanide¹ and other toxic substances into the marine environment. In addition, Kensington Venture has requested that they be allowed to discharge tailings water containing elevated levels of cyanide and heavy metals into a "mixing zone" in Lynn Canal just north of Pt. Sherman. If this is approved, Kensington will be able to discharge tailings water that exceeds state and federal water quality standards directly into Lynn Canal.

¹ "...a properly operated cyanide leaching facility should pose no danger to humans and nearby wildlife in terms of hazard due to cyanide poisoning. Releases of cyanide into receiving surface waters and subsequent degradation or loss -- in all likelihood temporary -- of fisheries are generally the most probable threat." Forest Service *Draft Scoping Document* April 1990, p. 59.

² We believe that project wastewater should be treated to pre-project water quality levels prior to release into Lynn Canal--full wastewater treatment should be integral part of DEIS.

Despite these probable impacts, and although the Forest Service has identified the Lynn Canal fishery as a "key issue of concern" in its review of Kensington, only eleven days of cursory biological studies have ever been conducted in the Pt. Sherman area for the Kensington project³ (three days in April 1988, six days in April 1989, two days in October 1989). This ignores repeated recommendations by state and federal agencies that extensive biological and oceanographic research be conducted at Pt. Sherman.

These agencies have found serious deficiencies in the initial studies, and have recommended further marine research on numerous occasions⁴:

Concerning extant marine investigations, we do not believe that the outfall areas have been adequately described in terms of physical characteristics, fauna, bottom topography, bottom type, seasonal surface and subsurface currents, and normal turbidity ranges. (U.S. Fish and Wildlife Service, 12/10/90 letter to Kensington Venture)

We recommend that biological, chemical, and physical data be collected at the proposed discharge site in Lynn Canal. (National Marine Fisheries Service, 9/18/90 letter to Forest Service)

...our general impression is that these studies are not adequate to serve as a baseline for either predicting the effects of the proposed Kensington mine or to serve as the foundation of a monitoring program. (Alaska Department of Fish and Game, 1/17/91 letter to Kensington Venture)

The Forest Service itself has recommended additional baseline work in the marine environment. In a list of "Additional Needs for Baseline Data and Analyses (11/90)," Forest Service hydrologist Steve Paustian and fisheries biologist Don Martin recommended further assessment of marine biota, including:

- 1) Need to supplement nearshore biological survey with additional data.
Determine pelagic fish (including juvenile salmon) use of nearshore habitat.
- 2) Need to review commercial fishing statistics to determine adult salmon migration patterns.
- 3) Need to supplement bottom fish and crab survey with additional data.
Both crab pot and long line transects need to be repeated to evaluate habitat use throughout the year.

However, despite these almost universal recommendations, no new on-site marine research has been conducted since 1989. Though some of the information requested can be gathered from existing literature and local knowledge, cooperating agency biologists believe further research is needed at Pt. Sherman before impacts of the project can be assessed. Attachment 1 is a

³ See Attachment 2 for list of completed marine studies.

⁴ See Attachment 3 for further agency comments on the marine baseline work done for Kensington.

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Please see response no. 5.2.

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partial list of the marine work that has been requested by state and federal agencies, compared to what has actually been done.

At a minimum, the following additional marine studies should be conducted before the draft EIS is released:

- 1) Conduct scientifically repeatable studies to determine presence and timing of pelagic fish in nearshore area, particularly in cove north of Pt. Sherman. Biologists think that this may be an important nursery area for juvenile salmon, and possibly for herring and other species as well. Numerous biologists, including those contracted by the Forest Service to review this project, have acknowledged that they know little about the importance of this area to juvenile salmon, herring, and eulachon. Reportedly tidal currents create eddies in this area where a spill or mixing zone discharge could accumulate. This area is adjacent to the proposed barge ramp and fuel offloading area, where spills would be most likely. This area has also been proposed as a possible discharge location for the tailings water, and is also the end of Sherman Creek.

A valid study of this area should be conducted with full consultation with the Forest Service, Alaska Dept. of Fish and Game, and National Marine Fisheries Service. Biologists have tentatively suggested tow net and beach seine surveys during the times when juvenile salmon and herring would most likely be present.

- 2) Conduct scientifically repeatable studies to determine presence and timing of bottomfish and crab. As detailed below, initial surveys of these species were extremely limited. The Forest Service apparently is considering placing the tailings water discharge at a greater depth in Lynn Canal. Additional crab pot surveys, at different times of year, using proper crab pots, are needed, including times when crabs are likely to be present and enter traps (most of existing surveys were conducted during the molting period). Additional longline surveys, using variable-sized hooks, at different times of the year, are also needed. (See Alaska Department of Fish and Game comments, attached).

- 3) Conduct further, on-site study of the chemical and physical oceanography in nearshore area and at proposed discharge locations. Further information on currents, temperature, and salinity should be collected for each proposed discharge site, including dye studies, prior to release of the draft EIS. This information is necessary to determine where the discharge plume will go, how rapidly it will be diluted, where the metals which precipitate out from the plume will fall, and specific impacts of the discharge. The existing Lynn Canal oceanography report for Kensington did not examine oceanography in nearshore area or at proposed outfall locations and did not take place over a full year.

- 4) Conduct on-site surveys of marine mammals in Pt. Sherman area. Fishermen and others report frequent sightings of Stellar sea lions in the area and haulouts not far to the north.

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Please see response no. 5.2

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Please see response no. 5.2

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Refer to Chapter 4 of the FEIS which includes an expanded analysis of the Lynn Canal environmental impacts. Also refer to responses 93.45, 93.74, 93.75, 93.79 and Kessler and Vigers (1992).

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Considerable additional information on the occurrence of marine mammals in the vicinity of the project area was collected after receipt of this comment letter. A number of biologists with the ADF&G and gillnetters familiar with the Point Sherman area were interviewed, and data obtained from these interviews were included in the analysis in the FEIS.

Attachment 3

AGENCY COMMENTS ON LYNN CANAL, MARINE FISHERIES/ENVIRONMENT

Below are listed pertinent agency comments on existing marine baseline studies as well as recommendations for additional research. These comments reflect the consistent requests for marine baseline work.

U.S. Fish and Wildlife Service**6/7/90 letter to Forest Service**

Other additional items that should be included in the succeeding document are discussion of projected tailings pond water quality and levels of suspended tailings and sediment rate ... detailed discussion of the mixing zone and the Lynn Canal fisheries resources.

9/24/90 letter to Kensington Venture (KV)

Neither the fisheries plan nor the baseline plan include monitoring of metal levels in the marine environment. Baseline data is needed prior to mine development to record naturally occurring metal levels...

In addition to the surface water monitoring parameters listed in table D2, bioassays should be part of the monitoring plan...

12/10/90 letter to KV

Concerning extant marine investigations, we do not believe that the outfall areas have been adequately described in terms of physical characteristics, fauna, bottom topography, bottom type, seasonal surface and subsurface currents, and normal turbidity ranges.

The F&W Service requests that baseline data on metal levels present in sessile and resident mobile marine organisms be obtained for comparison with future operational monitoring data...

Because of the importance of Lynn Canal to both commercial and recreational fishing, this subject should be a component of the Environmental Management section, with particular reference to marine outfall and dock site/facilities discussion. However that was not apparent in the Applicant proposal. There is no assessment of species taken, harvest levels, fishing, crabbing, shrimping effort, or seasonal use of the area. If this type of information is presently being collected, then it should be noted. It is critical to fisheries concerns that this information be included in future documents.

National Marine Fisheries Service**9/18/90 letter to Forest Service**

In earlier meetings and in correspondence, we identified our concern regarding the discharge of contaminants into Lynn Canal and the potential for adverse effects to fishery resources and habitats. We recommend that biological, chemical, and physical baseline data be collected at the proposed discharge site in Lynn Canal.

Environmental Protection Agency**6/1/90 letter to Forest Service**

The plan for restoration of a drainage channel through the tailings pond will contribute to the transport of tailings downstream toward Lynn

100.53

Please see response no. 5.2.



January 27, 1991

Mr. Mike Phelan
ACZ Inc.
Jordan Creek Center
8800 Glacier Highway, suite 218
Juneau, AK 99801

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Dear Mike:

We were pleased to receive surveys of Berners Bay and Lynn Canal from the independent contractor helping to prepare the draft Kensington FIS. This type of direct survey of the recreational use of Berners Bay and Lynn Canal is critical to understanding the public's use of this area and evaluating impacts that may occur from the Kensington and other projects.

However, we are concerned that the current survey period is much too short to get a good picture of the kinds and magnitude of recreational use that take place in Berners Bay and in Lynn Canal. Such a limited survey period, especially at this time of year, will undoubtedly under-represent recreational use of these areas. Literally hundreds of people recreate in the Berners Bay area (and unknown numbers use Lynn Canal), and it is unlikely that more than a miniscule fraction of these fishermen, hunters, kayakers, boaters, sightseers and others have been able to fill out a survey.

We received the surveys in late December, just prior to the holidays, and were asked to return them by January 23. As a result, only about two weeks were available for people to respond. Many people in Juneau are out of town during this general period, and Berners Bay users who are in town are unlikely, at this time of year, to frequent the places where surveys were available (such as the Alaska Discovery store--open only two afternoons per week).

We would assume that this survey has been conducted because of the lack of good data on recreational use of Berners Bay and Lynn Canal, and we commend this attempt to more information. However, recreation was identified as a critical issue early in the initial scoping process and in subsequent comments last year, and the current survey comes across as a last-minute, incomplete effort. When I spoke with Ms. McGown of Beck and Baird, she said that the survey period could not be extended because of an impending deadline on the EIS.

Ideally, a survey of Berners Bay and Lynn Canal use would include on-site surveying at the Echo Cove boat ramp on repeated summer

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For a full discussion of the results of the recreation survey, please see Beck and Baird (1991).


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weekends, as well as distribution to local businesses and interest groups likely to be visited by Berners Bay users. Surveys should be distributed in Haines as well as Juneau.

Mike, can the current survey period effort be significantly extended? In the interest of a comprehensive EIS that adequately documents existing recreation uses in the project area and possible impacts from the proposed mine, we urge you to extend and expand upon this initial survey effort.

I'd be happy to discuss this issue with you. Thanks for your consideration.

Sincerely,



Chris Finch
SEACC staff

cc: Mary McGown, Beck and Baird
Roger Birk, U.S. Forest Service
Friends of Berners Bay
Territorial Sportsmen
Alaska Discovery
Sierra Club, Juneau group
Juneau Kayak Club
Juneau Audubon
Taku Conservation

environmental analysis process required by the National Environmental Policy Act. The Forest Service has yet to adequately explain a reasonable basis for failing to evaluate the environmental consequences of the 1990 Kensington drilling plan and the full Kensington project in a single impact statement. In deciding our appeal, you acknowledge that the drilling is vitally linked to full mine development: "The use of the proposed structure(s) is dependent upon the actual operation of the mine." Appeal Decision at 3. According to NEPA, such connected actions must be considered in a single EIS. Although this issue is central to our appeal, you do not directly address this concern.

Your November 30th decision states that "the basis of the evaluation of the mining operation is centered on the proposal as submitted - as it is with any other project initiated for implementation." Appeal Decision at 3. This is exactly the kind of tunnel vision that NEPA was designed to avoid. As SEACC has repeatedly pointed out over the last few months, the many small decisions made by the Forest Service over the past three years have added up to some major impacts at the Kensington site. Your November 30th decision unfortunately affirms such piecemeal decision-making. Such management violates NEPA, bypasses the legitimate planning process, and does a disservice to the public, which never gets a good picture of the overall impact of many small decisions until it is too late.

We stand by our assertion that the drilling illegally segmented the NEPA process.

2. The Forest Service's justification for its decision to allow the drilling is unclear, inconsistent, and poorly documented in the November 30 appeal decision and throughout the drilling planning process.

We remain unconvinced of the need for the drilling prior to completion of an EIS, an uncertainty which apparently is shared by the Forest Service. In the District Ranger's initial November 9 decision and in repeated conversations with Forest Service personnel, the Forest Service's primary justification for the drilling was that it was needed to determine the viability of the millsite: "This decision will provide the Forest Service with information on the feasibility of the proposed millsite." November 9, 1990 Decision Notice at 3. As we stated in our appeal, local engineers considered it very unlikely for the millsite not to be feasible. This contention apparently has been borne out by the preliminary results of the drilling.

In the November 30 decision, however, the Forest Service changes its mind about the fundamental need for the drilling: "The economic viability of the mill site is not a major factor in the determination of suitability for development, as related to the Forest Service analysis." Appeal Decision at 3. This

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All correspondence related to the Kensington Project was reviewed during development of this EIS.

inconsistency brings the very basis of the initial Forest Service decision into question.

The Forest Service goes on to say that the drilling is needed because "it is not our desire to require a company or organization to accept an alternative that is economically harmful to them..." *Id.* No one is asking them to do that, and a decision by the Forest Service not to allow the drilling would not have caused such a result. We simply asked that the drilling not occur until cumulative impacts (of drilling and the full project) and other potential mill sites were evaluated in the EIS process.

The Forest Service agency still has not substantiated its claim that such a delay would result in "severe financial harm," a question we raised in our November 26 letter to the Forest Service. Furthermore, if the company's economic interest is the primary Forest Service justification for the drilling (as it apparently is), it sets an alarming precedent for Forest Service management of future mining development on the Tongass.

The Forest Service forsakes its stewardship responsibilities when it puts private interests over public ones. This also sets the stage for future conflicts rather than solving very real problems.

Gary, we urge you to take a step back from the Forest Service's narrow view of the Kensington project and re-evaluate the agency's role with regard to this mine and mining in general on Tongass National Forest lands.

Sincerely,

Bart Koehler

Bart Koehler
Executive director

Robert Lindquist

Robert Lindquist
Staff attorney

Chris Finch

Chris Finch
Staff assistant

100.55

November 26, 1990

Mr. Gary Harrison
Forest Supervisor--Chatham area
U.S. Forest Service
204 Siglnaka Way
Sitka, AK 99835

DISTRICT RANGER _____
DEPUTY RANGER _____
TLM _____
REC _____
F&W _____
EM _____
VIS _____

Dear Mr. Harrison:

This letter responds to the additional information from the District Ranger which you faxed to us on Friday, November 23 in regards to our appeal of the Kensington drilling plan.

The approved drilling, as well as the additional information provided by the District Ranger's office, exemplifies the fundamental problem with the Forest Service's approach to Kensington and to hard-rock mining in general: instead of working as stewards of the public's land and resources, the Forest Service is actively promoting the interests of a mining company.

This is not the Forest Service's job. The 1872 Mining Law, although a powerful piece of legislation, does not completely tie the Forest Service's hands. The Forest Service retains the power to regulate "occupancy and use" in order to minimize adverse environmental impacts on the surface resources of the national forests.

Under the existing Tongass Land Management Plan, the Forest Service is directed to manage "LUD II" areas such as the Kensington site "in a roadless state to retain their wildland character." Mineral activity is allowed subject to existing laws and regulations. According to the existing TLM, mining in a LUD II area is subject to "strict controls on road construction and mining." (1979 TLM, p. 118)

At Kensington the Forest Service has taken on the inappropriate role of being an advocate for the project. This perceived role is clearly evident in the information which you forwarded to us.

The Forest Service begins with two incorrect implicit assumptions. First, the Forest Service wrongly assumes that the current Kensington proposal will be approved as proposed. Second, the Forest Service wrongly assumes it is the agency's responsibility to maximize Kensington's profits.

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Please see response no. 100.55.

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The Forest Service then presents several specific arguments in support of the proposed drilling. The following is our response.

1. The lack of alternative sites for the mill is an illogical and insufficient rationale to allow the drilling.

According to the Forest Service, the drilling is needed because only one site has yet been identified in the EIS process. Therefore, your agency has declared that it needs to make sure that the site is feasible in order to ensure that the EIS is "credible."

Like the proposed drilling, this argument puts the "cart before the horse." The Forest Service's responsibility is to ensure that all reasonable alternatives are considered in the EIS -- not to ensure that Kensington's own proposal is feasible. So far, the Forest Service has not considered other reasonable alternatives, including underground milling, milling at the Juallin site, off-site milling, and other potential mill locations in the Sherman Creek drainage and in other areas.

Instead, the Forest Service has turned its own failure to evaluate other sites into a rationale for the drilling (i.e., "Because this is the only proposed site, this drilling is needed"). This drilling is inappropriate before different mill sites have been proposed and evaluated through the EIS process.

2. Perceived economic hardship for the Kensington Venture is an unsubstantiated and insufficient reason to allow the proposed drilling.

The Forest Service writes that if the drilling is not allowed, "we could find that alternatives in the final are infeasible. This would cause a significant delay in the project while we prepare a supplemental EIS. This delay would cause severe financial harm to the Kensington Venture."

First of all, if all of these problems did occur (and that is a very big "if") what would the "severe financial harm" be? The public's land and resources should not be compromised for hypothetical financial losses because mine development construction cannot begin exactly when Kensington wants it to begin.

Secondly, this assertion relies on a long list of questionable assumptions. It assumes that: 1) the project will be approved; 2) the proposed mill site will be the final site selected by the Forest Service; 3) the proposed mill site will turn out to be unfeasible.

The second assumption is especially uncertain given the lack of

consideration that has thus far been given to other potential mill sites. It also ignores the requirement that other proposals, including some sort of joint mill facility with the Justin project, underground milling, and off-site milling will be given serious consideration. The Kensington Venture will endure greater financial hardship if they plan on the proposed mill site as being the final site (as the Forest Service seems to be now encouraging them to perceive it) and it turns out that another site is selected.

Furthermore, the Forest Service has failed to address the question of the likelihood that the proposed site will not be feasible. According to two outside engineers, there is very little chance that the site will not be feasible. Instead, the proposed drilling is actually needed in order to design the mill. Such design is premature before other mill sites have been adequately considered.

3. As we stated in our Notice of Appeal, the proposed drilling would illegally segment the EIS process.

The Juneau District Office's reliance on *Conner v. Buford* is mistaken. First, this case dealt with oil and gas development, not hardrock mining. Second, the "no surface occupancy" (NSO) stipulations at issue in that case "absolutely forbid the lessee from occupying or using the surface of the leased land unless a modification of the NSO stipulation is specifically approved by the BLM." *Conner v. Buford*, 848 F.2d 1441, 1447 (9th Cir. 1988). In this case, the feasibility drilling by Kensington Venture will result in both the occupancy and surface disturbance of national forest lands.

Third, the Ninth Circuit did not uphold the agency's decision to issue leases with non-NSO stipulations without preparation of an EIS. See Additional Information at 2. Rather, the court expressly held that the sale of a non-NSO leases constituted the "point of commitment," and therefore an EIS was required before the sale. *Id.* at 1149-51.

Although the mitigation stipulations approved by the District Ranger provide some protections for surface resources, we remain unpersuaded that they will reduce the effects from drilling on goats and bears to an insignificant level. See *id.* at 1450.

4. The proposed drilling is not appropriate as an amendment to Kensington's 1988 operating plan for exploration work.

The Forest Service makes the outlandish claim that the proposed drilling is similar to exploration work because it is "designed to define the existence of a viable millsite." This work is

vastly different from ore body exploration and should be in the overall EIS. According to the Forest Service's EA, this drilling will be used to get information for design and engineering of the mill. This is not ore body exploration.

The Forest Service goes still further to state: "If a viable millsite is not found, then the ore body is not viable." This argument suggests that the viability of the entire project relies on the viability of this particular millsite. This assertion is clearly flawed. Furthermore, given other options that are available, including off-site milling and the possibility of joint milling with Jualin, it is not at all clear that a viable millsite at the Kensington site is crucial to the mine's overall viability.

The drilling was originally proposed as a separate operating plan. We want to know why it was changed to an amendment to an earlier operating plan and what role the Forest Service played in this change.

5. Cumulative Impacts

The challenged Environmental Assessment fails to analyze the cumulative impacts from this proposal. If the cumulative impacts from the feasibility drilling on goats and bears, when added to other past, present, and reasonable foreseeable actions, are significant, then even this little first step must be accompanied by an EIS. See 40 C.F.R. § 1508.27 (b)(7).

We are deeply concerned that your agency is allowing development work and related surface disturbances that are inappropriate prior to consideration in an EIS which examines the full range of alternatives and impacts of construction and operation of the Kensington mine. This strikes us as setting a very bad precedent.

Gary, we believe that the Forest Service can fix the aforementioned problems with the Kensington project and retain its role as steward of the public land in the public's interest. We urge you to discontinue further drilling until additional millsites have been considered and the cumulative impacts assessed in the full mine EIS. We look forward to working with you and your staff in this matter.

Thank you for your time,

Burt Koehler
Burt Koehler
Executive Director

Robert Lindekugel
Robert Lindekugel
Staff Attorney

Chris Finch
Chris Finch
Staff assistant

October 23, 1990

Mr. Ken Mitchell
Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

DISTRICT RANGER
DEPUTY RANGER

TLM
REC
F&W
BM

Dear Ken:

SEACC would like to express its opposition to the Kensington Venture's proposed 1990 exploration, condemnation, and feasibility study program. This plan of operations is objectionable for the following reasons:

A. The activity proposed would jeopardize supplemental baseline information gathering and the ability of the Forest Service to assess environmental impacts of the project as a whole.

1. The activity associated with the proposed drilling would be a major disturbance and could negatively affect the mountain goats and black bears currently being studied, as well as other species. This would further compromise the ability to gather baseline information on these species.

2. If allowed, the drilling activity would almost certainly have a negative impact on wildlife at and near the drill sites. Such an impact would cause future "baseline" study to falsely conclude that the habitat value of these areas is relatively low.

3. The drilling would further reduce the ability of biologists to study the winter habitat use of goats and bears in the project area. Though some impacts may already have occurred during "exploration" development, the opportunity still exists to gather critical winter data on goats, bears, and other species in the project area, and specifically at and near the sites proposed for future facilities.

B. The proposed drilling would have significant surface disturbances.

1. The drilling would involve clearings of 50 feet in diameter for each helicopter-supported drill site.

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Please see response no. 100.55.

2. The surface-supported drilling would involve clearing for skid trails/roads for hauling in the drill equipment.
 3. Multiple helicopter trips would be required both to bring in and remove drill equipment at each helicopter-supported site.
 4. Drilling and associated disturbance would take place over a prolonged period with sustained noise and activity potentially disruptive to wildlife.
 5. Drilling and extensive helicopter use would take place near potentially significant mountain goat habitat above the proposed mill site and could also reduce the likelihood of black bears denning in the project area.
- C. The proposed drilling is an integral part of the production phase of the project and as such should be considered with the rest of the proposed project in the Forest Service's environmental impact statement.
1. The proposed drilling is needed to provide structural information for the design of proposed production-phase facilities. These facilities have not yet been approved through the EIS process.
 2. The proposed drilling is not essential to project exploration or to developing an environmental impact statement (EIS) for the project.
 3. The proposed drilling would segment the EIS process, and mean that individual components of the same project would be considered separately, instead of as a whole.
- D. The proposed drilling would further limit the range of feasible alternatives to be considered in the EIS and would bias the NEPA process.
1. Drilling in the proposed areas would be premature prior to the Forest Service's evaluating alternative sites for tailings disposal, mill and camp and making a final decision on the project.
 2. If drilling is allowed, the associated investment by Kensington Venture will add to the incentive to approve final project facilities at the proposed sites.
 3. By eliminating or reducing wildlife use in the proposed sites, the drilling will unfairly favor final siting of

the dam, mill, and camp in the company's proposed locations. Once drilling is allowed, placement of the facilities at the preferred sites will appear to have less impact on wildlife than development of facilities at undisturbed sites.

The proposed plan of operations, if approved, would continue the history of premature, production-oriented development that has occurred at Kensington. If allowed now, this drilling would compromise information gathering that is important for the EIS and cause further impacts before an EIS can be completed. We urge you not to approve this drilling prior to completion of the EIS.

Sincerely,

Chris Finch
Chris Finch
SEACC staff

100.57

October 19, 1990

Mr. Ken Mitchell
Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

DISTRICT RANGER
DEPUTY RANGER
TLM
REC
F & W
BM
VIS

Dear Ken:

Thank you for taking the time to meet with Buck and me on Monday. It was refreshing to hear your plans to take an objective "hard look" at the Kensington project and to pinpoint potential problems.

On behalf of the Southeast Alaska Conservation Council, I welcome you to your new position as Juneau District Ranger. It's good not to have to start from "ground-zero" with our new district ranger. We are looking forward to building on the working relationship we established with you in your role as Admiralty Island Monument manager.

In hopes of pursuing the open dialog we discussed at our meeting, I have attempted below and in the attached outline to expand upon SEACC's August 1990 report on Kensington and Jualin and to clarify our concerns with the project's baseline studies. Most of the concerns expressed in SEACC's report still hold. These concerns must be addressed by the Forest Service. The following are among the key deficiencies we have identified:

A) Baseline information on the marine environment in Lynn Canal is almost entirely lacking, despite the fact that this is arguably the most valuable resource that could be adversely affected by the proposed project.

B) Wildlife baseline information is still inadequate.
Despite wide consensus among resource agencies on the deficiencies of the baseline studies, this information has not been acceptably supplemented.

c) No analysis has yet been made of the cumulative impacts of the Kensington along with other potential mining projects.

As SEACC has stated to the Forest Service on several occasions, we are concerned that if the current schedule for the project's environmental impact statement is maintained, the EIS

PELICAN FORESTRY COUNCIL • FRIENDS OF BERNERS BAY, Juneau • WRANGELL RESOURCE COUNCIL • SITKA CONSERVATION SOCIETY
 FALSE ISLAND-KOOK LAKE COUNCIL, Tenakee Springs • LYNN CANAL CONSERVATION, Haines • TADU CONSERVATION SOCIETY, Juneau
 MARROWS CONSERVATION COALITION, Petersburg • FRIENDS OF GLACIER BAY, Gustavus • TONGASS CONSERVATION SOCIETY, Ketchikan
 ALASKA SOCIETY OF AMERICAN FORESTWOMEN, Point Baker • JUNEAU GROUP STEPPED CLUB • YAKUTAT RESOURCE CONSERVATION GROUP

100.58

Please see response no. 5.2.

100.59

Please see response no. 100.9.

100.60

Please see FEIS Chapter 4 for a discussion of cumulative impacts.

To: Ken Mitchell, Juneau District Ranger
 From: Chris Finch
 Date: October 19, 1990
 Re: Kensington baseline studies

The following comments address SEACC's specific concerns over current "baseline" information on the Kensington mine project.

I. Baseline information on the marine environment is almost entirely lacking.

The Final Scoping Document includes the following question in the Fisheries section: "What is the current habitat conditions and fish communities in Sherman Creek, other creeks... and the Lynn Canal?" For the rich marine environment and valuable resources of Lynn Canal, this question has barely been addressed. An understanding of adult fish movements, juvenile migration and rearing habitat, other fisheries in the area, and the local currents and circulation patterns that would influence dispersion of effluent or unplanned spills is critical to determining the potential impacts of the project and how cleanup would be handled in the event of a spill.

A. The vacuum of information regarding the affected marine environment prevents meaningful assessment of the project's impact on an important part of the project's affected environment.

1. The Kensington Venture has not been required to conduct baseline studies of adult and juvenile salmon migration patterns in the vicinity of Point Sherman;
2. Baseline fisheries studies conducted so far have focused primarily upon the impacts to freshwater in the project area;
3. The project's "Nearshore marine biological survey" consisted of only 7 days of minimal study and did not include anadromous species (see Attachment: list of Kensington fisheries studies);
4. Lack of oceanographic data on currents and circulation at proposed effluent outfall location will hamper accurate assessment of impacts.

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Please see responses no. 4.2, 5.2 and 100.60.

100.61

4. provide an analysis of what effluent levels are acceptable for salmon and other marine species;
5. assess potential effects if releases of tailings effluent chronically exceed standards.
6. provide worst-case assessment of potential risks to marine fisheries in event of a major spill or dam failure, for each of alternative tailings dump sites;

II. Wildlife baseline studies are inadequate.

A. The Initial Wildlife and Wetlands Resources baseline study prepared by Dames and Moore was seriously flawed.

In reviewing the study, the Department of Fish and Game found that "the conclusions of the report are not supported by the data presented in the report or by our general knowledge of the area." (Letter from ADFG to Kensington Venture, March 6, 1990) Other agencies have agreed. The U.S. Fish and Wildlife Service wrote the following in regard to the baseline information:

Although the material incorporated in these volumes is extensive and provides general background information, it does not provide enough specific information on fish and wildlife resources to be of use as pre-development baseline data. (June 7, 1990 letter from USFWS to FS)

Furthermore, in response to minutes taken at an interagency meeting on Kensington, ADFG wrote: "...all parties agreed that the Dames and Moore 'Wildlife and Wetlands Resources' document was poorly prepared. It was mentioned that the methods were poorly written; hence the results are unclear and the surveys are not repeatable....species lists as presented by the Dames and Moore document are worthless data in the context of a site-specific mine impact study." (April 13, 1990 letter ADFG to FS)

B. Deficiencies in the wildlife baseline information remain uncorrected.

ADFG recommended that the Dames and Moore study be supplemented with scientifically repeatable surveys to examine mountain goat, moose, black bear, brown bear, and bald eagles. Toward this end, ADFG urged that:

Baseline information gathering concerning population densities and distributions of particular game species would best be served by early initiation of a radio telemetry program. At a minimum, black bear, wolves, and mountain goats should be included in such an effort. (March 6, 1990 letter from ADFG to KY)

B. Without good baseline studies on the marine environment, including salmon, bottomfish, crabs, blue mussels, and other important species, it will be difficult to determine in the future whether effluents from the mine are adversely affecting marine life.

C. Though SEACC, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service have requested comprehensive baseline information on the marine environment, this information has not been required by the Forest Service.

1. "In earlier meetings and in correspondence, we identified our concern regarding the discharge of contaminants into Lynn Canal and the potential for adverse impacts to fishery resources and habitats. We recommended that biological, chemical, and physical baseline data be collected at the proposed discharge site in Lynn Canal. This important aspect of fisheries monitoring is not included in the monitoring plan." (September 18, 1990 letter from NMFS to FS)

D. The effect of proposed levels, and unplanned releases, of effluent on salmon and other marine resources cannot be accurately assessed without adequate baseline information.

E. The Venture's promise to closely monitor the process is no panacea for the potential dangers to the marine resources in Lynn Canal. Monitoring will not protect fisheries from:

1. chronic effects from very low-level effluent releases; or
2. major, uncontrolled accidental discharges of cyanide, chlorine, diesel fuel, tailings or some other toxic substances.

F. We urge the Forest Service to take the following steps to ensure that potential impacts to marine resources are fully understood.

1. require baseline studies of adult and juvenile salmon migration patterns in vicinity of Point Sherman prior to completion of draft EIS; in particular, critical fish rearing habitat immediately north of Pt. Sherman should be studied.
2. require baseline studies of salmon, bottomfish, blue mussels, and other populations in the Pt. Sherman area to use as basis for determining future impacts.
3. require study of current and circulation patterns at proposed effluent outfall location;

C. Deficiencies in the baseline work should be corrected before the Forest Service proceeds with the EIS and before further mine-related development takes place.

Logically, ADFG asked that this supplementary work be carried out "prior to further mine-related disturbances" (ibid) and that "release of a draft EIS should not precede the ability to describe the affected environment because the analysis of the environmental consequences would not be complete." (June 1, 1990 letter from ADFG to Forest Service)

This statement goes to the heart of SEACC's concerns over the Kensington project. Radio-collaring of black bear and goats has begun only in the past month. Compiling comprehensive baseline data on these species will require a full year of study. Under the current schedule, the EIS will be completed and production start-up construction will have commenced before this baseline information is acquired. For the Forest Service to proceed with the EIS before baseline data is supplemented would continue the trend of inadequate NEPA analysis that has characterized Kensington and would set a bad precedent for future mining projects on the Tongass.

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August 7, 1990

Ms. Sally Edwards
Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Ms. Edwards,

On behalf of the Southeast Alaska Conservation Council, we would like to submit the following comments on the Forest Service's oversight of the Kensington Venture Gold Project and the Juallin Mine. Following a thorough review, SEACC is greatly concerned about the hands-off approach the Forest Service has taken toward monitoring these two projects.

After reviewing baseline studies, original maps of project areas, files containing correspondence between the Forest Service and project managers as well as notes taken by Forest Service employees, we believe the Forest Service is not adequately monitoring the two projects and is failing to ensure that they proceed in an environmentally and socially responsible manner.

In the latest development, Kensington has submitted its 1990 Plan of Operations requesting permission to perform condemnation drilling for its proposed mill and tailings disposal site. SEACC cannot urge strongly enough that this action not be approved until a full environmental impact statement (EIS) is conducted. Forest Service approval of this development would continue the trend of premature development that has occurred at Kensington. This type of development, allowed prior to the completion of an EIS, is one of the major subjects within our report.

Kensington's proposed testing will result in significant environmental impacts including 49 test pits and 20 drill sites with clearings measuring 50 feet in diameter as well as associated skid trails and helicopter use. Such surface disturbance is completely unwarranted in the absence of a detailed EIS.

The proposed drilling will explore the feasibility of Kensington's preferred sites for the placement of their tailings impoundment and mill. This is exactly the opposite from the way the EIS process should work. The purpose of an EIS is to allow for the exploration of several alternatives and, from the collected data, selecting the best one. Kensington must not be allowed to condemn sites prior to them being chosen the "best alternative" by the EIS process.

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Administrative appeals of earlier plans of operation for the Kensington Project are on file in the Juneau Ranger District. The DEIS addresses a plan of operations for a full production facility.

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SEACC is alarmed that Kensington has the audacity to cite the worst baseline studies (wildlife and wetlands, fisheries resources and cultural resources) as support for their assertion that there are no critical resources that would be permanently impacted. Again, SEACC wishes to emphasize the need for more comprehensive, scientifically repeatable studies before any such decisions are made.

The proposed condemnation drilling should occur only after an EIS is completed and other alternative sites evaluated. The fact that the Forest Service is even considering such an operating plan without an EIS is indicative of the hands-off management stance they have taken to date. SEACC hopes that the Forest Service will reject this operating plan and insist that Kensington first undertake the appropriate environmental analysis. Please accept this letter as our formal comment on Kensington's proposed 1990 operating plan.

Sally, we realize this is not the forum in which you would prefer to see criticism of the Forest Service's handling of mining claims in the Juneau area. However, we feel we were left with little choice. Although the Forest Service has "listened" to our frequently repeated concerns over the past several months, these concerns have not been addressed. Rather than condemning the Forest Service, this report is intended to let you know of our concerns in a formal way, and to hopefully serve as a basis for constructive change.

Thank you for this opportunity to comment.

Sincerely,

Jane Cassidy
Jane Cassidy

Chris Finch
Chris Finch

Steve Kallick
Steve Kallick

100-62

May 31, 1990

Ms. Sally Edwards
Juneau District Ranger
U.S. Forest Service
8465 Old Dairy Rd.
Juneau, AK 99801

Dear Ms. Edwards:

Enclosed are SEACC's comments on the Forest Service's draft scoping document on the Kensington Venture Gold Project. As we stated in earlier comments, dated January 25, 1990, we view the proposed project with great concern. The project is located in a largely undeveloped area, an area known for its scenery, wildlife, fisheries and wild character.

Regardless of the best mitigation and monitoring efforts, the project would have irreversible impacts on the qualities that make Lynn Canal and nearby Berners Bay such special places. This tradeoff, and its full implications, must be acknowledged by the Forest Service and the Kensington Venture partners. To ensure a truly fair public process, to ensure that the public understands the decision that it is making, these non-mitigatable impacts should be acknowledged "up front" in future planning documents.

Timeline is too fast.

First, however, these impacts must be fully assessed. This takes time and effort. We are especially worried that the Forest Service and the Kensington Venture have set an unrealistic timeline for the proposed project. Under the schedule listed in the draft scoping document (p. 50), a final environmental impact statement will be issued by January 1991 and the project will "start up" in March 1991, less than 10 months from today. We do not believe that the impacts of the project can be adequately assessed within this time period, much less within the four months between now and when the draft environmental impact statement is scheduled to be issued.

Undoubtedly there are economic and other reasons why the Kensington Venture wants to get through the permitting process and start operation as soon as possible. While we understand their motivation, they and the Forest Service must not forget that the project would occur on public land. What's more, the project is proposed on public land that, according to the Forest Service's own designation, is supposed to be managed "in a roadless state to protect their wild character." Congress passed

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All comments on the Draft Scoping Document were considered in preparing the Final Scoping Document.

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HARROUS CONSERVATION COMLITION, Petersburg • FRIENDS OF GLACIER BAY, Gustavus • TONGASS CONSERVATION SOCIETY, Ketchikan
ALASKA SOCIETY OF AMERICAN FORESTDWELLERS, Point Baker • JUNEAU GROUP SIERRA CLUB • YAKUTAT RESOURCE CONSERVATION COUNCIL

the National Environmental Policy Act in part so that the full impacts of proposed developments on public land would be analyzed and made available to the public before projects got underway, giving the public an opportunity to make a decision based on a well-informed knowledge of the tradeoffs involved. We insist now and will continue to insist that the analysis of impacts related to the Kensington project is comprehensive and presents a clear picture of the impacts the project would or could have on local Southeast residents, fish and wildlife populations, our social and economic environment, and the environment at the site. This has not been accomplished in the planning documents so far issued.

As discussed below, SEACC along with state and federal agencies and other concerned parties have found serious deficiencies in many of the "baseline" studies conducted for the project.

These studies are crucial because they form the basis for analyzing how people and the environment will be affected by the project. For example, the Alaska Department of Fish and Game (ADFG) has found that "the conclusions [in the Wildlife and Wetlands Resources baseline study] of the report are not supported by the data presented in the report or by our general knowledge of the area; release of this report as the proposed project's wildlife baseline study appears premature."

We appreciate that the Kensington Venture has been receptive to concerns expressed by the public and our state and federal agencies. However, efforts to meet these concerns must be comprehensive. In other words, bandaids are no substitute when major surgery is needed.

One of ADFG's major contentions was that mountain goat studies were inadequate and were conducted using helicopters, which are not an accepted means of surveying goats. The Kensington Venture recently conducted a 5-day goat study to address some of the deficiencies. This is a prime example of the bandaid approach--such a study, however scientific, does not give the long-term understanding of goat populations and their seasonal movements that is needed to fully analyze potential impacts.

Comprehensive, year-round studies must be made of goats and other species in the area, as well as of birds, freshwater and marine fish, marine mammals, not to mention human use of the area, including recreation, hunting, fishing, subsistence. These studies must be conducted in each of the different seasons, and must be repeatable by other scientists. Random wildlife sightings, descriptions of species life histories, and other anecdotal information are no substitute for scientific analysis. We would strongly urge that future wildlife studies be carried out with full consultation and participation of ADFG biologists familiar with the area and with the species being studied.

The US Fish and Wildlife Service reports that two years are needed to acquire needed baseline information on various species, and even that does not account for long-term population cycles and fluctuations. At a minimum, USFWS reports, a year is needed to acquire relevant baseline data. Given the major deficiencies in present baseline data, it would be impossible to compile all of the lacking information in the brief time remaining before the scheduled issue of a draft EIS. We urge the Forest Service and the Kensington Venture to show their good intentions by slowing down the project schedule and taking the time to acquire the needed baseline information.

A realistic assessment of the impacts of the project is also needed. Repeatedly the public has been promised that mining projects will not have major impacts on the environment, will not pollute air, water, and local wild areas. And almost just as often as the promises have been made, they have also been broken, sometimes despite the best intentions of the mining companies involved. The Greens Creek mine on Admiralty Island National Monument, for example, has worked hard to minimize environmental impacts but has still had major problems with effluents containing zinc and cyanide emptying into Hawk Inlet. The point is that unrealistic promises have no place in the planning process. The public must be made fully aware of the potential impacts of the project.

Kensington Venture and the Forest Service must assess cumulative impacts of regional mining.

The Kensington mine is just one of a multitude of mineral projects that are being developed and/or explored in the Juneau area. According to a state study, there are 4892 mining claims between Juneau and Skagway. Of these, 175 are "significant," according to the Federal Bureau of Mines. As part of this phenomena, the impacts of the Kensington must be assessed together with the impacts of the other mineral projects planned or under exploration in the area. The Kensington is just one project out of all these, and it alone could have major impacts on our area. Looked at together, mining projects in the Juneau "Goldbelt" area could have massive effects on the environment and the socio-economic fabric of our region, and threaten to change the elements that give Southeast Alaskans the high quality of life we enjoy.

The Forest Service and local communities have the ability to plan what we want our area to look like in the next 20, 50, 100 years. At present, mining is occurring piecemeal, one project at a time. The impact of each individual project may not be that great, but taken together, the implications just of the many mining currently being planned are gigantic. In the Juneau area, mineral exploration or development is occurring or is possible in many of

our most popular recreation areas: Berners Bay, Herbert Glacier, Lynn Canal (Kensington and Dream projects), Taku Inlet, Douglas Island, Sheep Creek valley, Spaulding meadows, etc. Together these projects would mean that recreational and subsistence opportunities are restricted and that use and pressure on remaining recreational areas would increase. Together these projects also threaten to strain our housing, public facilities and schools, and to radically change the flavor of our communities (the Kensington and A-J projects alone could result in nearly a 10% increase in Juneau's population). It is the Forest Service's responsibility to make the public aware of the overall cumulative impacts that could result if many major mining projects are approved for the region.

We urge that the following steps be taken to ensure that cumulative impacts are acknowledged: 1) future Kensington planning documents should assess the cumulative impact of the Kensington project along with other projects in the area, including A-J, Jualin, Greens Creek, and other major planned projects; 2) the Forest Service should begin to plan, with full public participation, where mining projects can be considered and where they will be actively discouraged. At present mining projects and exploration are springing up across our region virtually unchecked, with little planning. The Forest Service has a mandate to protect fish, wildlife, recreation, subsistence, and other resource values under the Multiple Use Act, the National Forest Management Act, and other laws. This mandate is not superseded by the 1872 Mining Act. The Forest Service must aggressively protect these resources and recognize that there are areas where minerals development should be actively discouraged. The Forest Service must also acknowledge that certain values will be compromised if mineral development is allowed to proceed--not all impacts can be magically "mitigated" away.

Socioeconomic Impacts

SEACC's concerns are largely covered in the above section on cumulative impacts. The cumulative economic effects of the Kensington, A-J, and Jualin mines should be analyzed in the Draft EIS. Though workers will be temporarily lodged in shifts at the project site, they would have homes and families in the Juneau area. How will the addition of 350 workers and their families affect Juneau? Will increases in local housing prices make the area unaffordable to some residents currently living here? What will the overall increase in local population be? How long would it take Juneau to build the infrastructure needed to support these new people. Other questions that should be addressed in the EIS: Will this project make other mines in the area more viable/likely to occur? Do the residents of Haines and Juneau want this project? What will the economic impacts be on tourism, commercial fishing, guiding and recreation businesses? What percentage of workers will be hired locally vs. out-of-state?

What would the local economic impact be in the event of a shutdown? SEACC raised most of these questions during the scoping period. However, few were added to the list of scoping issues. We ask again that these questions be specifically addressed in the planning process.

Land Use

The Kensington project would be at the heart of a "LUD 2" area under the Forest Service's current Tongass land management plan. Lands under the LUD 2 designation are supposed to be managed "in a roadless state to protect their wildland character." Clearly the proposed project conflicts with this land use designation and would disrupt the wildland character of the area. How can the Forest Service consider allowing such a project when it is clear that other resources and uses of the area, resources and uses that LUD 2 designations are designed to protect, would clearly be compromised? This apparent conflict must be addressed in future Kensington planning documents.

Transportation

SEACC strongly objects to the following transportation scenarios outlined in the Draft Scoping Document: an airstrip along Lynn Canal, an 8.5-mile road from the mine to Slate Creek Cove, a 3-mile road extension from Echo Cove with associated docking facility, any proposal which would involve transportation in Berners Bay or along the Juneau road system.

The project would also involve the transportation of cyanide, diesel fuel and/or liquid propane gas, explosives, and other hazardous materials along Lynn Canal and other Southeast waterways. What are the potential impacts of a cyanide or fuel spill on people, fish, wildlife? What can be done to reduce the chances of such a spill? How dangerous would such a spill be to local residents? wildlife? What route will barges and other vessels carrying these substances travel? Future planning documents should include a map which shows all shipping routes in Southeast Alaska waters.

Another factor which should be spelled out in the scoping document is the frequency of each alternative type of transportation? How many trips per week of barges, planes, ferries and other forms of transport are expected?

Commercial fishing--The project would have great potential for disrupting commercial fishing operations at Point Sherman. Pt. Sherman is one of the most congested gillnetting areas in Lynn Canal, with up to 50 boats, each with a quarter-mile-long gillnet. According to fishermen from the fleet, there have already been conflicts--last summer barges bringing supplies into the mine interfered with gillnetters fishing in the Pt. Sherman

area. The Coast Guard is already concerned about the amount of industrial shipping in Lynn Canal. If conflicts continue, fishing could be closed down in this important gillnetting area.

Legitimate concerns over gillnetting are raised in the Draft Scoping Statement but are not included in the list of official scoping issues under transportation. The following questions should be addressed in the scoping document and EIS: What impacts would the proposed project have on the Lynn Canal gillnet fishery and the Pt. Sherman anchorage? How, specifically, will the Kensington Venture attempt to eliminate conflicts between shipping and the gillnetters? Can the potential impacts be entirely eliminated? What are the potential costs to the gillnet fishery and local economy?

Recreation and subsistence

The scoping document does not adequately address potential impacts on subsistence hunting and fishing in the area. Though direct impacts may not be great at the mine site, the project may indirectly cause greater hunting and fishing pressure on other areas important for subsistence. A scientific study of recreational and subsistence use of the area, and potential effects of the project on these activities, should be included in baseline information. The study should also look at expected future demand for subsistence and recreational opportunities--it seems more than likely that this demand will only rise--and the cumulative impacts of the loss of this and other areas due to mining, logging, and other development activities. Such a study should be part of any assessment of the cumulative impacts of mining in the region.

The project would in no way enhance the type of recreational opportunities (those in primitive, roadless areas) that are most in demand.

Wildlife and fisheries

Detailed baseline information, collected in all seasons of the year and using accepted scientific data collection methods, is needed on the species which use the Kensington area, including mountain goat, black and brown bear, wolf, moose, bald eagle, peregrine falcon, and other important species. Accurate information is needed on population densities and seasonal and spatial distributions of these species before impacts upon them can be assessed. The information in the current wildlife baseline study is inadequate, as explained in ADFG's comments. Even the cursory information that is provided does not support the finding that the "Sherman Creek site would probably sustain the lowest impact from disposal site development." Such conclusions are clearly premature and seem to be a blatant attempt to slant the planning process in favor of the Sherman Creek alternative. We

support ADFG's suggestion that studies of the above species be undertaken using radio telemetry. We urge the Kensington Venture to slow down and take the time needed to comprehensively assess current wildlife populations and the potential impacts that this project would have upon them.

The freshwater fisheries report is so cursory it's an embarrassment--it appears to be a political document designed to support use of Sherman Creek as the tailings disposal site rather than a neutral, scientific study. Though Sherman Creek contains pink salmon, Dolly Varden, and sculpin, the study reports it to have lower fish diversity and abundance than the Slate Lakes, in which only four Dolly Varden were captured. This misrepresentation of the researcher's own findings appears to be another attempt to bias the planning process. The research upon which these "conclusions" are supposedly based is also clearly inadequate. The researcher himself repeatedly notes that minnow trap sets were "unproductive, probably due in part to the use of pickled roe." Fisheries investigations were only conducted in the fall. Other information presented in the report is similarly speculative and does not support the writer's clearly premature conclusions. Such unscientific, biased research has no place in the planning process.

Baseline information is also needed on saltwater species, including halibut and rock fish, and on marine mammals, including humpback whales.

We urge the Kensington Venture and the Forest Service to consult with and include ADFG personnel in conducting thorough, long-term studies of wildlife and fish populations in the Kensington area. Such studies are critical to our evaluation of the project, and must be undertaken before an unbiased evaluation can take place.

Tailings disposal

Adequate baseline data is needed before the various options for tailings disposal can be compared. It is obvious that the Kensington Venture prefers the Sherman Creek site, but this must not preclude an unbiased assessment of the different tailings disposal alternatives. As we have noted repeatedly, the "baseline studies" conducted to date do not conclusively show this to be the preferred site.

Also, the ore body needs to be conclusively defined before tailings disposal options are selected. Kensington Venture has shown the viability of 20 million tons of ore, but is continuing to explore and appears optimistic that more ore will be recoverable. It seems absurd to plan for a tailings structure that would hold only 20 millions tons, and a corresponding mine life, when it is likely that more ore will be discovered. Preferably this will be resolved before the alternatives are

developed for the EIS. If not, the likelihood and potential impacts of a larger-than-expected project should be addressed.

Noise

The Kensington Venture is planning for grinding to take place aboveground. How loud will the grinding be? What impacts will it have on wildlife, recreationists, tourists and others in the area? Over what distance will the processing operations and road traffic be audible?

Monitoring

Who will implement the monitoring over many different parts of the proposed project? This should be spelled out and planned for in the environmental impact statement.

Other baseline studies

We have been informed of major deficiencies in many of the other baseline studies conducted for the project, particularly the study of aesthetics. We plan to review as many of these studies as possible and will submit comments on them as soon as possible.

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In summary, we have important concerns over the proposed project. Comprehensive, unbiased baseline studies are needed for a whole range of resources and uses that would be affected by the proposed project. We view these studies as the basis for understanding what the project would mean to local residents, fish and wildlife, and our social and economic well-being. We urge the Forest Service and Kensington Venture to slow down the planning process so that this information can be obtained and the full impacts of the projects can be put "on the table." We also believe that it is critical that this project be viewed in light of other mineral developments pending in the Juneau area. We urge the Forest Service to 1) include a full assessment of cumulative environmental and socioeconomic impacts of this and other projects in the Kensington draft EIS, and 2) take the lead in evaluating the cumulative impacts of and planning for future mineral development. The wild areas of Southeast Alaska like Lynn Canal and Berners Bay are a big part of the high standard of living we enjoy here. We urge the Forest Service to do its utmost to protect the resources and values associated with this undeveloped country.

Thank you for this opportunity to comment.

Sincerely,

Chris Finch
Chris Finch
SEACC staff

January 25, 1990

Ms. Sally Edwards
 Juneau District Ranger
 Tongass-Chatham National Forest
 U.S.D.A. Forest Service
 8465 Old Dairy Road
 Juneau, Alaska 99801

Dear Ms. Edwards

Enclosed are the scoping comments of the Southeast Alaska Conservation Council (SEACC) on the Kensington Venture Gold Project. We appreciate the opportunity to comment on this issue, and expect to remain involved as this process continues.

As outlined in the Project Description prepared by The Kensington Venture, the mine would have serious impacts on the wildlife, fish, and ecology of the proposed site. The proposed tailings impoundment, surface facilities, and marine terminal would destroy the wilderness quality and aesthetics of the area, and would significantly detract from the experience of tourists, recreationists, fishermen, and the many others who travel along Lynn Canal. Given the special scenic character of Lynn Canal, it is imperative that visible development be kept to a minimum.

Also of great concern is the proximity of the project to Berners Bay. The bay is heavily used by Juneau residents and visitors for recreation, sport and subsistence hunting and fishing, weekend outings, and simply as a place to get away from it all. Its accessibility and wild qualities make Berners Bay a very special place. How would development of the Kensington mine affect the proposed Berners Bay wilderness? Impacts on the bay, whether from pollution, noise, increased transportation traffic or other changes related to the proposed Kensington project, must be avoided.

On-land tailings disposal in any of the proposed sites will cause permanent damage to the wilderness and aesthetic qualities of the region. A comprehensive analysis of the costs and benefits associated with backfilling tailings into the mine should be conducted.

Comprehensive studies of fish and wildlife in the area, and of recreation at the mine site and in nearby Berners Bay, and a detailed analysis of potential effects of the mine on these resources and uses, are essential before permits can be issued.

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Your earlier comments on the Kensington Project were considered in developing the Draft Scoping Document for the Kensington EIS.

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...)? What will be the effect on housing and housing prices in Juneau? What would be the effects of an unanticipated mine shutdown on the economies and unemployment rates of Juneau and Haines/Skagway? What will be the likely economic effect when the mine closes?

What impacts would the proposed mine have on the region's commercial fishing industry? What would the impact be on the sportfishing, guiding, outfitting, and outdoor recreation industries? Will opening the Kensington mine make other mining projects in the area more economically feasible?

Land Use

How would development of the Kensington mine affect the Land Use Classifications of other nearby Forest Service land?

Adjacent Mining Property

Will development of adjacent mining property be more likely if the Kensington proceeds?

Transportation

Transportation of workers, equipment and supplies to and from the mine must be discussed in much greater detail than it is in the Project Description. The following questions should be addressed: How many trips would be made per day with each type of transportation (barges, high speed ferries, planes)? How would this increased traffic affect wildlife, commercial fishing, tourism, recreation, and other uses of Lynn Canal and Berners Bay? How would it affect existing air and water traffic? What are the relative impacts of air vs. ferry transportation of mine workers? How often would the ferry be prevented from operation because of weather? Is an airstrip essential to mine operations? What other areas of Southeast Alaska will be transited by vessels carrying hazardous materials (cyanide, reagents, explosives, etc.) for the mine? What plans will be prepared for any potential spills? Will these plans be completed and opened for public comment before permits are granted?

How would the Kensington mine affect proposals to build a road from Juneau to Haines?

Hazardous Materials

In the largely enclosed waters of Southeast Alaska, a spill of cyanide, diesel fuel, or other hazardous substances could have disastrous consequences. Large quantities of these materials will

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be used in the mining process. The mining partners should be required to have booms and cleanup equipment, as well as trained personnel, on hand to immediately deal with any spill. What procedures will be used to minimize the possibility of a spill? What plans will be made in the event of a spill? Who will be in charge? What containment equipment and trained personnel will be available to clean up a spill? Where will the equipment be located? Who will monitor transportation, storage, use and disposal of hazardous materials? How will handling and storage facilities minimize the danger of an accident? When will the Spill Prevention Countermeasure Control Plan and the Plan of Operations be ready for public review? Will they be completed before major permits are issued?

Air Quality

What technology will be used to reduce emissions from diesel generators and waste incineration? Will Kensington Venture commit to using best available technology even if it is more costly? How will emissions affect visibility and air quality on Lynn Canal and in Berners Bay? How will emissions from diesel generation and incineration be vented?

Recreation

Comprehensive baseline studies should be made of present recreation at and near the proposed site. What recreational opportunities will be lost or impacted if the mine opens? How would noise and air emissions of the project affect recreation in Berners Bay and Lynn Canal?

Noise

How will project noise affect wildlife?

Wildlife

Detailed baseline studies, conducted in each season of the year, are necessary to analyze what impact the mine would have on wildlife. Specific concerns include: what wildlife habitat will be lost, temporarily and permanently, because of the project? What are potential reductions in wildlife populations? Will the project increase hunting pressure on local wildlife? What will be done to prevent migratory and other birds from using the tailings pond?

Baseline information is especially needed on mountain goats, bears, and other furbearers, and on bald eagles and peregrine falcons. Mountain goat populations are dwindling in Southeast

Alaska. Do goats use the area around the proposed mine? How would development affect them? Also, what impact will effluents and increased marine traffic have on humpback whales in Lynn Canal?

Water Quality/Aquatic Biology/Fisheries

The project description states that most of the free cyanide will be neutralized before entering the tailings pond and, potentially, surface and marine water. No cyanide should be allowed to enter the environment. Exactly what chemicals and other pollutants, in what quantities, will enter surface water? What effects will these substances have on anadromous fish and other organisms? Will these substances be able to enter the groundwater? What will be the effect of these pollutants on marine fish and organisms and the general environment of Lynn Canal? How will stream flow be isolated from the tailings on a long-term basis after the project is completed?

Reclamation

A detailed reclamation plan should be completed before major permits are issued. The plan should rehabilitate the area to the fullest extent possible, and ensure that adequate bonds are posted by the company to complete reclamation. All mine and terminal facilities should be removed following the project (not only "where possible").

Monitoring

A comprehensive monitoring program should be developed. The program should regularly monitor air quality and visibility, surface, ground and marine water quality, terrestrial ecology, wildlife, fish, and marine organisms. Handling and storage of diesel fuel storage and other hazardous substances should also be regularly monitored.

Thank you for this opportunity to comment.

Sincerely,

Chris Finch
SEACC staff

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The issues identified in the Scoping process are important ones, and we look forward to seeing them examined in detail as the NEPA process continues. The following are additional issues which should be addressed in the EIS process.

Tailings Disposal and Impoundment

Probably the most questionable part of the project as currently proposed is the on-land disposal of tailings in Sherman Creek watershed. The analysis in the Project Description does not adequately address the effects of any of the tailings disposal options on recreation opportunities, tourism, wildlife, subsistence users, and the aesthetics of the area, nor the cumulative, long-term effects of tailings placement. The option of backfilling the mine with tailings and waste rock should be analyzed in much greater detail.

In its present form, the large impoundment structure would have a major visual impact for tourists and others on the Marine Highway System, cruise ships and other tour boats. Also, the ability of such an impoundment to completely and permanently keep toxic substances associated with the tailings out of the local environment is not at all certain. The massive size of the impoundment is also cause for concern--will it definitely be stable in the event of an earthquake? What would happen if it did give way?

Greater Ore Volume

At Greens Creek mine on Admiralty Island, ore deposits have turned out to be much larger than originally anticipated. What is the possibility that greater than expected amounts of ore will be recovered at the Kensington mine? How definitely is the present ore body defined? If substantially more ore was discovered or found to be recoverable at Kensington, what would be the effects on the tailings impoundment and the environment in general? How would the answers to other questions identified in the scoping process be changed? This possibility should be examined as an option in the EIS.

Socio-economics

It seems likely that the 350 mine workers will have some sort of residence in Juneau for their families or for off-duty periods. How much will the total population of Juneau increase because of the mine? What will be the cost to the City and Borough of Juneau of the added population base? What new public facilities, such as schools, will be required if the Kensington mine opens, especially in conjunction with other mines in the area (e.g., the

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December 4, 1989 DISTRICT RANGER
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Sally Edwards, District Manager
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Ms. Edwards:

SEACC regards Kensington Ventures proposed Kensington Mine project with great concern. Many Juneau residents regard the Berners Bay region as a high quality wildland recreational area within easy access of Juneau. When we take into consideration this special prominence associated with the region, it is clear that additional attention must be given to the visual impact as well as the ecological damage that is inherent in large scale mining operations. The impact to Berners Bay proper should be kept to an absolute minimum.

The visual impact to the Alaska Marine Highway is very important. Mining operations of this nature have traditionally been incredible eyesores. Prohibiting any and all unnecessary development is the key to preventing problems. The roads to Slate Cove are an example of extraneous development which should not be allowed.

One of the more questionable aspects of the proposed operation is the massive impoundment structure that will be composed of cemented tailings. The extreme potential height of the structure brings in question its stability, especially under extreme circumstances like earth tremors. Our initial concern is that the mining company intends to use the seemingly elaborate structure as an excuse for not reclaiming mining tailings at a later date.

The mine operators should be required to allocate sufficient resources to maintain the impoundment structure in the event of a premature shutdown. The public needs to be assured that it will not be burdened with the responsibility of cleaning up a mess at any point -- now or in the future.

A precedent has been set which requires the Greens Creek Mine to return as much rock as possible back underground. They are able to operate under this requirement, so there is no excuse for the Kensington Group which will operate under much more favorable circumstances in terms of ore quality.

The disaster in Prince William Sound has elevated the public's attention on the issue of oil spill prevention. When you take into consideration the enormous volume of fuel which will be utilized in

PELICAN FORESTRY COUNCIL • FRIENDS OF BERNERS BAY, JUNEAU • URANCILL RESOURCE COUNCIL • SITKA CONSERVATION SOCIETY
FALSE ISLAND-KOOK LAKE COUNCIL, Tenakee Springs • LYNN CANAL CONSERVATION, Haines • Taku CONSERVATION SOCIETY, Juneau
MARROW CONSERVATION COALITION, Petersburg • FRIENDS OF GLACIER BAY, Gustavus • TONGASS CONSERVATION SOCIETY, Ketchikan
ALASKA SOCIETY OF AMERICAN FORESTDWELLERS, Point Barrow • JUNEAU GROUP SIERRA CLUB • YAKUTAT RESOURCE CONSERVATION COUNCIL

100.65

Please see response no. 100.64.

Page 2
Sally Edwards
December 4, 1989


the operation and the uncertain conditions of shipping and transferring at port, it is imperative that the company have oil spill containment equipment and trained personnel ready to respond in the event of a spill. Mine operators should have to prove, via on-site inspections by the Forest Service, that they have containment equipment on location -- taking their word for it on paper is insufficient.

It is important to note that the track record of cyanide and chlorine's ability to wreak havoc throughout an ecosystem's food chain is well documented. The proposed dumping of undestroyed cyanide into the tailing compound is a disastrous policy which SEACC strongly opposes.

Finally, SEACC strongly supports the comments submitted to you by the Juneau Chapter of the National Audubon Society.

Thank you in advance for acting on our concerns. We would appreciate being kept posted on any further developments.

Sincerely,


Bart Koehler
Executive Director

100.65

30 Aug 91

DISTRICT RANGER _____
 DEPUTY RANGER _____
 TLM _____
 REC _____
 F&W _____
 EM _____
 VIS _____

U.S. EPA

1200 6th Ave.

WD-134

Seattle, WA 98101

Shells -

101

I am writing to protest the proposal of a mining zone in Lynn Canal, Southeast Alaska, for the Kensington mine.

#1) How thoroughly has the ecology of the impact zone been studied?

- Comprehensive, detailed data must be collected before the feasibility of a dumping zone can be assessed.

#2) Is a dumping zone even necessary?

- All waste water should be treated and meet state and federal laws before it enters Lynn Canal.

#3) Follow Silver Creek mine's lead. Backfill tailings into the mine rather than dump them elsewhere.

We have an invaluable fishery & scenic resource in the Lynn Canal. The mining company must pass the bill for environmentally sound mining practices, and this must be legally enforced.

Christa Sen, 70 Box 1012, Petersburg, AK 99833

101.1

Please see responses no. 4.2 and 5.2.

101.2

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

101.3

Please see response no. 7.4.

102.1

102.1
Comment noted.

Regarding the Kensington Mine, 8-17-91
 proposed for a mining plan. There are
 all sorts of reasons I should not
 even be considered as a possibility.
 But in this case, it's the 'environmental'
 issue that is the problem. So let's
 do a more in-depth study concerning
 protecting the resources.

Very truly yours

Harold B. Plante
 Box 47, Delta, BC
 V9C 5S5

August 21, 1991

Ken Mitchell
U.S. Forest Service
8465 Old Dairy Rd.
Juneau, AK 99801

Dear Mr. Mitchell:

I am writing to express my views on the proposed Kensington mine. I have recently spent some time in Juneau and feel strongly that the Forest Service and EPA should extend the comments deadline until October 1, 1991.

The company should be required to conduct thorough studies of local crab, bottomfish, and juvenile salmon use of the Pt. Sherman area. The company also needs to assess cumulative impacts of Kensington and A-J population increases and be prepared to pay the costs of added social services.

No pollutants should be allowed in Lynn Canal and a long term plan for maintaining any tailings dam in perpetuity needs to be developed.

It is my sincere hope that all aspects of the impact of the development of the mine will be studied and that wise planning will eliminate negative environmental and social consequences.

Sincerely,

Bryson Dean
Bryson Dean
PO Box 578044
Modesto, CA 95357-8044

BUREAU
RANGER DISTRICT

PROPERTY RANGER
BUREAU

103.1

Please see response no. 1.1.

103.2

Please see response no. 5.2.

103.3

Please see responses no. 5.3 and 5.4.

103.4

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

103.5

Please see response no. 7.5.

Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell,

August 30, 1991

After attending local meetings concerning the proposed Kensington mine and listening to the information offered by all the various speakers promoting and defending the mine project, I remain unconvinced that this mine can be done in an environmentally sound fashion.

The Lynn Canal is a limited body of water. I am opposed to any marine discharge of heavy metals or toxic wastes of any kind. I am deeply concerned about the cumulative affect of such discharge and think that must be considered. Heavy metals do not simply disappear with the flushing action of tides. The bottom of the Skagway harbor is grim proof of this fact.

It is crucial to consider the economics of this proposed mine in a long-term way. Fisheries, despite seasonal fluctuations in fish returns and price, has proved a steady economic base to the town of Haines over a period of many years. To endanger and very probably severely impact a known renewable resource for the short-term exploitation of a non-renewable one is poor economics. I have lived in Haines for over twenty years and intend to continue living here. Any long-term resident must oppose this boom-bust mentality.

If the mine must be permitted, there are several requirements which I think essential to the operation of such a project:

There must be continuous independent monitoring of any environmentally threatening aspect of operation. The mine company cannot be trusted to monitor itself and report on its own violations.

On-site monitoring of all off-loading of hazardous chemicals (including fuels) is extremely important.

There must be dry tailings storage with as much tailings return to the mine as is physically feasible.

We hear daily of environmental disasters in other states through just such operations as this proposed mine. The Lynn Canal is a pristine environment. That is its highest value. We cannot allow it to be polluted. We must not let that pollution start here with the Kensington mine.

I oppose the development of this mine.

Sincerely,

Mark Sogge, P.O. Box 696
Haines, AK 99827

104.1

104.2

104.3

104.4

104.5

104.1

Please see response no. 93.25. Note that the effluent would not be classified as toxic waste as defined by RCRA.

104.2

Please see response no. 4.2.

104.3

Please see response no. 83.5.

104.4

Comment noted.

104.5

Please see response no. 7.4.

August 31, 1991

Juneau District Ranger Ken Mitchell
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Ranger Mitchell:

Attached are my comments on the Kensington Mine project addressed to the EPA. As stated in this letter, I believe that the comment period for the proposed mine should be extended. I hope that you will see reason why the comment period should be extended and also request the same.

105.1

105.2

I urge all of those who read the comments on the proposed mine realize how toxic to the environment allowing a mixing zone would be. I urge you to please request that the mine not be allowed to have a mixing zone and have a water treatment plant instead which released non-toxic waste into Lynn Canal.

Sincerely yours,



Joyce Levine
P.O. Box 1705
Juneau, AK 99802

A-266

105.1

Please see response no. 1.1.

105.2

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

August 31, 1991

105.3

The Forest Service allowed 90 days during which comments on the DEIS could be submitted. This is twice the minimum period prescribed by regulation and equals the recommended comment period for forest plans.

Director, Water Division
United States Environmental Protection Agency
1200 6th Avenue
WB-134

Seattle, Washington 98101

To whom it may concern:

105.4

The scenario you propose is not based on realistic behavior patterns for fish and, therefore, has no analytical value in assessing the impacts of the project.

The comments below are those I read at the EPA hearing in Juneau in Centennial Hall with reference to the mixing zone that I would like you to have written record of. I have also added some other comments which pertain to the issue.

I am here to express my comments on the massive Kensington Gold Mine which threatens the Lynn Canal fisheries. How ironic it seems that this DEIS has been released intentionally when many of those whose lives would be the most affected by such a mine, namely those working in the fisheries, will not all be able to present their views of such a project since they are in the midst of making their livelihood. I think you need to take into consideration those whose livelihood you are threatening to allow them to speak. Ah yes, freedom of speech. It seems as though here at these hearings, in respect to those that fish, the words, freedom of speech, are just words if you do not make it possible for those whose lives you threaten to come here and let their thoughts be known. As far as having written comments by Sept 3rd, during a fishing season life is busy enough without having to think about a gold mine that threatens their livelihood. I realize that you gave one extension on the comment period, but the extension that you gave was still in the middle of the fishing season. The comment period needs to be after the fishing season for that area in order to be fair. I urge you to extend the comment period by at least two months on the mixing zone.

According to the DEIS, dissolved solids which would flow into Lynn Canal are listed by milligrams per liter. If one were to convert these lousy bitsy milligrams per liter into pounds for a projected 10 years you would have approximately:

875 pounds of arsenic, 2,188 pounds of chromium, 5,033 pounds of copper, 273,541 pounds of iron, 7,659 pounds of lead, 39,390 pounds of manganese, 1,094 pounds of nickel, and 2,188 pounds of zinc.

I am not against mining as long as it is done in an environmentally sound way. I personally consider cleanliness an important element in the health of our lives. We eat better balanced foods because we want to hold on to our health. We exercise to keep our bodies in shape so that our health will stay well. Many of us don't smoke because we don't want to contract cancer. Cancer...a sickness which affects more and more people everyday, all over the world. People are contracting cancer because of what they are breathing, eating, and drinking. We need to stop putting toxins into our environment. I would like to see it written in the DEIS as to

105.3

105.4

-2-

- 105.5** Refer to Chapter 4 of the FEIS and, for a more complete technical discussion to Kessler and Vigers (1992). The analysis indicates that water clarity will not be significantly affected anywhere in Lynn Canal, including the immediate vicinity of the outfall. The worst-case projected average decrease in water clarity is less than 9 percent in the immediate vicinity of the outfall, which falls below the State objective or upper limit or upper limit of 10 percent. Refer to the response to question 87.1 for discussion of mixing zone flushing.
- Fish would be expected to detect the plume through smell. The important consideration, however, is how long organisms would remain in an area where they would be able to detect the plume, and, whether concentrations at such locations would be harmful. As discussed in DEIS Chapter 4, certain fish such as salmon would be expected to detect the plume when in very close proximity to it. Given the distribution of salmon in the water column during summer and fall, and their tendency for movement, there should be no adverse effects to this resource.
- 105.6** Please see response no. 4.2.
- 105.7** Please see responses no. 4.2 and 86.11.
- 105.8** Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.
- 105.9** Please see response no. 5.4.

what would happen to a fish if it swam around in the mixing zone for the projected 10 year period and filtered into its system all of the toxins from the proposed mine (listed on the previous page) and then you, who want to allow this mixing zone to take place, ate that fish. That fish that had been swimming around in all of those toxins. I think that there would be a good probability that you would contract cancer from eating that fish.

From listening to the panel and the questions asked by the audience, I realize how weak the oceanography and marine studies are for the Kensington Mine Project. There seems to be a number of unanswered questions on the validity of the process of opening the mine. I'd like to see a study as to how long a period of time the fish in that area will visibly see the mixing zone and what the flush rate is for the mixing zone. I would like to see further studies on the mixing zone as I do not feel there is presently enough information to show that these toxins which would be released would not be dangerous. As of now, I do not want a mixing zone in Lynn Canal. If you don't put it out at a safe level, then it is not safe. I have worked 6 seasons in the fisheries and I realize how sensitive fish are to their environment. I would like to see industries of all kinds come to Juneau, but I want those industries to grow with the other industries we have and not destroy the other industries.

The Kensington Mine proponents boast of how many jobs the mine will bring to Juneau. The fisheries in the area of Point Sherman, Lynn Canal, employ many people who make their livelihood in the fisheries. I am in favor of keeping the environment where these people fish clean as opposed to supporting the employment of the mining industry which shows how it will pollute the fishing area where these fisher people are already employed. If we are talking about jobs, I would rather keep the fishing industry employed as it has a projected life span longer than 10 years which is the approximate span of time for the mine.

I do not want to see the mine be given any permits to operate if what they are releasing into Lynn Canal does not meet high water quality standards of safety. Whatever it is that they release I would like it to be clean and non-toxic in meeting the water quality standards. A water treatment plant, in my mind, would be absolutely necessary to assure the quality to the environment.

My concerns on the mine also include socio-economic effects such as a mine would have on Juneau which I will not include in this letter as the purpose of this letter is to address the mixing zone. Thank you very much for hearing my comments and I hope you will allow the fishermen time to express their opinions when the fishing season is closed. If you truly believe in freedom of speech I think you need to allow the fishermen the time to get their comments in, as the plans for this mine greatly affect them. Just say no to the mixing zone.

Sincerely yours,



Joyce Levine
P.O. Box 1705
Juneau, Alaska 99802

MR. NEW MITCHELL
U.S. FOREST SERVICE
B465 OLD DANEY RD
JUNEAU, AK 99801

DEAR MR. MITCHELL,

THANK YOU FOR COMING TO MINES ON AUGUST 8TH AND LISTENING TO OUR COMMENTS AND CONCERNS. I WOULD LIKE TO TELL YOU AGAIN, THIS TIME IN WRITING, HOW I FEEL ABOUT THE KENSINGTON

GOLD MINE.

I AM VERY CONCERNED ABOUT THE EFFECTS THIS MINE WILL HAVE ON OUR ENVIRONMENT, AND I AM VERY UPSET WITH THE ROLE THE FOREST SERVICE IS PLAYING IN ALLOWING IT TO GET ESTABLISHED, LIKE A CANCER, IN OUR NATIONAL FOREST.

THE ECHO BAY MINING COMPANY WANTS TO TEAR APART A MOUNTAIN, COVER A FORESTED VALLEY WITH TAILINGS (RENDERING IT LIFELESS FOR CENTURIES) AND DUMP POISON-LADEN MINE EFFLUENT INTO THE PRISTINE WATERS OF LYNN CANAL WHERE THEY WILL KILL OUR CONTAMINATE THE FISH THAT OUR COMMUNITY DEPENDS ON FOR INCOME AND FOOD. FOR WHAT?

SO THAT A CANADIAN COMPANY CAN GET RICH? SO THAT SOME CANADIAN MINERS CAN HAVE JOBS FOR 12 YEARS? DO WE AS A SOCIETY REALLY NEED GOLD JEWELRY INSTEAD OF GOOD HEALTHY FISH TO EAT? IS THIS WHAT THE FOREST SERVICE CONSIDERS WISE STEWARDSHIP OF OUR NATIONAL FOREST?

LIKE MANY OF MY NEIGHBORS HERE IN MINNESOTA I CONSIDER MYSELF TO BE A REFUGEE FROM THE INDUSTRIAL WORLD. I GREW UP IN NEW JERSEY IN A NEIGHBORHOOD SURROUNDED BY PLASTIC FACTORIES, OIL REFINERIES, AND CHEMICAL PLANTS. THIS AREA IS NOW KNOWN AS "CANCER ALLEY". I LOST

MY FATHER AT A YOUNG AGE TO CANCER THAT I AM CONVINCED WAS ENVIRONMENTALLY INDUCED. MANY, MANY OF MY PARENTS GENERATION ARE DEAD OR DYING BECAUSE OF THESE WONDERS OF MODERN INDUSTRY. AN ANALOGY OF THE MINE BEING A CANCER IN OUR NATIONAL FOREST IS RAISED ON DIRECT EXPERIENCE. I CAME TO ALASKA TO ESCAPE THE DEGRADATION CAUSED BY THE INDUSTRIAL WORLD AND I HAVE SPENT THE LAST THIRTEEN YEARS FIGHTING TO KEEP IT FROM FOLLOWING ME. RECENTLY IT WAS WINDY CROGGY, NOW KENSINGTON THREATENS OUR HEALTH AND LIVELIHOOD. WE HAVE NOWHERE ELSE LEFT TO GO, SO WE HAVE TO MAKE OUR STAND HERE.

I HAVE HAD THE PRIVILEGE OF BEING ONE OF A HANDFUL OF PEOPLE TO HAVE STOOD ON THE SUMMIT OF MT. SINCLAIR, THE HIGHEST POINT ALONG THE NORTHERN LYNN CANAL. FROM THE VANTAGE POINT OF 7000' UP IT BECOMES APPARENT THAT FOREST IS A RARE COMMODITY IN THIS PART OF THE WORLD. IT EXISTS AS A GREEN GRAVE BETWEEN A VAST AREA OF ROCK AND ICE AND A SLENDER ARM OF OCEAN.

A LOOK AT THE USES MAP OF THIS AREA WILL TELL YOU THE SAME THING. THE FOREST THAT SEEMS SO VAST WHEN YOU ARE IN IT IS, IN REALITY, SMALL AND FRAGILE. YOU, WHO ARE IN CHARGE OF THE

STEWARDSHIP OF THIS NARROW BAND OF LIFE SHOULD, I BELIEVE, TAKE INTO CONSIDERATION THE LIVES OF THE CREATURES WHO LIVE IN THE FOREST

106.1

AND THE LONG TERM EFFECTS OF A MINE SUCH AS KENSINGTON. GO TO FAIRBANKS, OR TO THE SIERRA NEVADA FOOTHILLS AND YOU WILL SEE CLEARLY THE EFFECTS OF GOLD MINING. STILL PLAINLY EVIDENT FROM 90 AND 140 YEARS AGO. VALLEYS ONCE FORESTED ARE NOW STILL JUST PILES OF TAILINGS WITH SPARSE VEGETATION. TO MINERS EVERYTHING

LIVING IS JUST "OVERBURDEN". KENSINGTON PROPOSES TO DENUDE A VALLEY FILLED WITH LIVING PLANTS AND ANIMALS AND FILL IT WITH POISONOUS TAILINGS. THERE ARE MINERALS UP AND DOWN THE LYNN CANAL. WHAT

106.2

106.1

Gold mining conducted 90 to 140 years ago did not operate under the controls imposed by modern regulatory practices. Current regulations were developed, in part, to prevent the recurrence of the type of impacts you cite.

106.2

If another mine is proposed on Lynn Canal the Forest Service will evaluate the impacts of the proposal under the provisions of NEPA and other applicable laws.

HAPPENS WHEN THE NEXT ANNE COMES ALONG AND WANTS TO DESTROY ANOTHER VALLEY, AND THEN ANOTHER? WILL THE FOREST SERVICE ALLOW THEM TO PROCEED ALSO? IS THIS GOOD STEWARDSHIP OF OUR NATIONAL FOREST? WHAT WILL MY GRANDCHILDREN SEE WHEN THEY

CIMA, MT. SINCLAIR?

106.2

WHAT WE HAVE HERE IS SPECIAL BECAUSE VIRTUALLY EVERY OTHER PLACE IN OUR COUNTRY HAS BEEN ALTERED FROM ITS NATURAL FORM, TAKEN OVER BY SOME FORM OF THE INDUSTRIAL WORLD; USED UP, EXPLOITED FOR PROFIT ALONE AND LEFT IN ECOLOGICAL RUIN WE DON'T WANT THIS TO HAPPEN HERE. WE DON'T WANT THE KENSINGTON ANNE

106.3

Comment noted.

"AND ITS MIXING ZONE", ITS POISONOUS CHEMICALS AND FUEL SPILLS, ITS DESTRUCTION OF A BEAUTIFUL VALLEY. IT BENEFITS NO ONE WHO LIVES HERE AND HAS THE POTENTIAL TO CAUSE GRIEF TO MANY. I URGE YOU MR MITCHELL TO DO WHAT YOU CAN TO PREVENT THE DESTRUCTION OF OUR NATIONAL FOREST. THANK YOU

MY WIFE, DONNA CATOTTI, SHARES MY CONCERNS AND WILL ADD HER NAME TO THIS LETTER.

SINCERELY,

Donna Catotti
Donna Catotti



HAINES BOROUGH

P.O. Box 1209 • Haines, Alaska 99827 • (907) 766-2711

JUNE 91

RANGER DISTRICT

SEP - 3 '91

107

August 30, 1991, DEPUTY RANGER

DISTRICT RANGER
TLM
REC
F & W
PM
VIS

Mr. Ken Mitchell
District Ranger
Juneau Ranger District
U.S. Forest Service
8465 Old Dairy Road
Juneau, AK 99801

Dear Mr. Mitchell:

Enclosed is a copy of Haines Borough Resolution #312 passed by the Borough Assembly on August 20, 1991.

This resolution relates to the release of any toxic wastes into Lynn Canal and the Borough's opposition to this action.

If there is another person or division within the EPA who should receive a copy of this resolution, please forward it to them.

Should you have any questions, you may contact me or Mayor Fred Shields at the above number.

Sincerely,

Becky Mitchell

Becky Mitchell
Clerk, Haines Borough

enclosure

HAINES BOROUGH
RESOLUTION #312

A RESOLUTION OF THE HAINES BOROUGH ASSEMBLY OPPOSING THE RELEASE OF ANY TOXIC WASTES INTO LYNN CANAL.

WHEREAS, the Kensington Venture, a gold mining project in the City and Borough of Juneau (CBJ) adjacent to Lynn Canal waters which are shared by both the CBJ and the Haines Borough, proposes to release toxic wastes into Lynn Canal; and

WHEREAS, many residents of the Haines Borough and non-resident fishermen who depend on the fishery in Lynn Canal are strongly opposed to the disposal of toxic wastes in the waters of Lynn Canal; and


WHEREAS, the Kensington Venture's toxic waste disposal system would dump toxic wastes directly into the waters of Lynn Canal on the assumption that the wastes will be diluted to federally and state-approved standards within a "mixing zone" at the end of the outfall pipe; and

WHEREAS, municipalities on Lynn Canal are required to treat toxic wastes and are prohibited from dumping toxic wastes into Lynn Canal waters,

THEREFORE BE IT RESOLVED that the Haines Borough Assembly is absolutely opposed to permitting any entity, private or public, from placing toxic wastes into the waters of Lynn Canal, and

BE IT FURTHER RESOLVED that the Haines Borough Assembly requests the U.S. Environmental Protection Agency, the U.S. Forest Service, and the Alaska Department of Environmental Conservation to prohibit any mixing zone in Lynn Canal and to require the Kensington Venture to treat its effluent so that any effluent released into the waters of Lynn Canal and/or the streams or their tributaries that flow into Lynn Canal meets federal and state standards for clean water.

ADOPTED: August 20, 1991

ATTEST: Becky Mitchell
Becky Mitchell, Clerk
Haines Borough
Frederick L. Shields, Mayor
Haines Borough

107.1

Comment noted.

9-1-91

JUNEAU
RANGER DISTRICT

10-4-91

Juneau District Ranger, Ken Mitchell
 U.S. Forest Service
 8965 Old Dining Rd.
 Juneau, AK 99801

DISTRICT RANGER _____
 DEPUTY RANGER _____
 TLM _____
 REC _____
 F & W _____
 PM _____
 VIS _____

Dear Mr. Mitchell,

I have just returned from an incredible summer in Alaska. I spent 3 months camping and enjoying the wilderness areas throughout the state, and was especially privileged to view the magnificent Lynn Canal. I am writing, in hopes that the deadline for comments from the public regarding the Kensington Mine, Juneau, has been extended to October 1.

I am very concerned about the protection of the Lynn Canal and request that the mining company do a thorough study of the local ecology, botanipal and salmon use in the Alleenon area. Please have the company put its tailings back into the mine to reduce waste and water quality impacts. If a tailing dam is needed, build a wastewater treatment plant to protect the Lynn Canal from pollutants. For tailings that can be backfilled, please use dry tailings disposal, not Please prepare a plan to maintain any tailings dam long-term.

108.1

Please see response no. 5.2.

108.1

On the Lynn Canal and request that the mining company do a thorough study of the local ecology, botanipal and salmon use in the Alleenon area.

108.2

Please see response no. 7.4.

108.2

Please have the company put its tailings back into the mine to reduce waste and water quality impacts. If a tailing dam is needed, build a wastewater treatment plant to protect the Lynn Canal from pollutants. For tailings that can be backfilled, please use dry tailings disposal, not

108.3

Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.

108.3

108.4

Please see response no. 7.4.

108.4

108.5

Please see response no. 7.5.

108.5

108.6

Please assess human costs as well, in terms of overdevelopment of the area, increased population, or added costs for schools, day care centers, etc.

We just returned to Southern California where the air is almost unbearable, the crowds intolerable, and the wilderness has disappeared. The quality of life has been eroded such that I may no longer be able to live here. Please protect Alaska at all costs - especially the Seward Canal. The loss would be incalculable.

Thanks for listening,

Respectfully yours,

Kathryn Knight

2419 Newport Ave.

Conduct-by-the-Sea,

CA 92007

(619) 436-0731

108.6

Additional analysis has been done to assess cumulative effects from operation of both Kensington and AJ mines. Please see Chapter 4 of the FEIS.

cc: Chairman John Hatterman, Interior Planning Commission
U.S. EPA, Director of the Water Division
Assemblyman Roderic Alpert
Vicky Hoover, Sierra Club Alaska Task Force

Dale Gosnell
P.O. Box 611
Skagway, AK 99840
1 September, 1991

U.S. Forest Service
8465 Old Dairy Rd.
Juneau, AK 99801

Dear Sir or Madam:

I am writing to express my objections to the proposed Kensington gold mining project. After attending the public hearing in Haines, I am convinced that additional studies of the marine environment must be conducted in order to accurately assess the impact of the project.

Moreover, the proposed "mixing zone" is simply an euphemism to obfuscate what Kensington intends to do, namely pollute the Lynn Canal with cyanide and heavy metals.

After just finishing this evening my dinner of Lynn Canal sockeye salmon, I can assure you that the flavor and quality of this fish would not be improved by the introduction of mercury into its flesh.

It seems that much of this potential pollution could be prevented if Kensington uses a dry tailings disposal rather than a dam. The tailings should be backfilled into the mine as much as possible.

If Kensington cannot prove beyond a doubt that it can safely operate this mine, it should not be built. To jeopardize the environmental health of the Lynn Canal and the health of the people who eat its bounty is reckless and irresponsible.

Thank you.

Sincerely,

Dale Gosnell

Dale Gosnell

109.1

Please see response no. 5.2.

109.2

Mixing zones are allowed by regulation under certain conditions. Refer to ocean discharge criteria set by EPA (40 CFR Part 125 Subpart M) and Alaska Water Quality Regulations (18 AAC 70.032)

109.3

Please see response no. 7.4.

cc: U.S. Environmental Protection Agency
1200 6th Ave., WD-134
Seattle, WA 98101

Southeast Alaska Conservation Council
419 6th Street, #328
Juneau, AK 99801

109.1

109.2

109.3



Lynn Canal Conservation, Inc.

Post Office Box 964
Haines, Alaska 99827

Kenneth E. Mitchell

District Ranger
Juneau Ranger District
8465 Old Dairy Rd.
Juneau, Alaska 99801

Re: Kensington Gold Project DEIS

Dear Mr. Mitchell:

September 2, 1991

DISTRICT RANGER
DEPUTY RANGER
FILM
REC
B&W
VSS

JUNEAU
RANGER DISTRICT

SEP 5 1991

The following comments summarize what we have entered on the official record during the public hearing process.

1) We are strongly opposed to the proposed "mixing zone". The only benefit that this would have is to cut costs for Kensington Venture. It is the Forest Services job to protect all resource users. This concept is nothing more than legalizing pollution. The long and short term risks are too great to allow this to proceed, especially in the pristine waters of Lynn Canal. In the midst of a renewable multimillion dollar salmon fishery, if the tailings dam option is used the company must be required to install a biotreatment wastewater facility with zero discharge of heavy metals, chemicals or other compounds into the waters of Lynn Canal. Wastewater monitoring must be done by an independent contractor paid for by Kensington Venture. The method of industry monitoring itself is a joke, at the expense of public resources. If Kensington Venture is found to be out of compliance, operations must cease until they take the necessary measures to abide by the laws, and previously agreed to regulations.

2) The Lynn Canal is an extremely active seismic region. The potential for a catastrophic earthquake in the next fifteen years is very real. Because of this imminent threat, the tailings dam is not a safe option. Waste rock from the mining operation should be back-filled to the maximum extent possible using the cut and fill method. The remaining waste can be stored in a dry tailings impoundment where runoff can be treated in a much more manageable way. This would eliminate the need for a massive tailings dam that would have to hold toxic mine waste in perpetuity. The dam is a disaster waiting to happen. History proves that disasters happen on a regular basis at the expense of the public's health and resources. It would be irresponsible to allow the company's plan of operations dictate the future of Lynn Canal and its resources. Kensington Venture does not favor this option because of increased costs that would cut into their profit margin.



Encouraging Environmental Awareness In The Upper Lynn Canal

110.1

Please see response no. 4.2.

110.2

Please see response no. 86.4. If by "biotreatment" the author is referring to biological treatment for metals and cyanide removal, this process is generally inappropriate for the treatment objectives and the climatic condition at the project site. Physical/chemical treatment as discussed would be more effective and reliable.

110.3

Please see response no. 83.5.

110.4

Enforcement actions against the Kensington Venture will be as prescribed by law and regulation.

110.5

See Comments 87.6 and 93.33 which address the stability of the dam structure under seismic loads. The technical merits of conventional tailings deposition vs. dewatered tailings are discussed in detail in Chapters 2 and 4 of the DEIS. The technical and operational merits of conventional tailings deposition outweigh the merits of dewatered tailings. The dewatered tailings method in high precipitation areas at the volumes envisioned for the Kensington Project is unproven. Dewatered tailings are highly sensitive to moisture, causing potentially significant constraints on placement, compaction and operations.

110.6

The Forest Service is processing the permit application, including analysis in accordance with NEPA and appropriate regulations. The mine will not be allowed to proceed without a Final EIS and Record of Decision being issued. If a Record of Decision approving the project is issued, the Kensington Venture must then complete the permitting process described in Chapter 1 of the EIS before starting mine construction.

3) The mine appears to be going into operation before the comments and hearings on the DEIS are in, and the public's concerns are adequately addressed. There have been numerous requests from state agencies and local citizen groups for comprehensive, thorough baseline studies of the Point Sherman and Lynn Canal area resources, marine and terrestrial. Studies to date have been conducted in a hastily contrived fashion while helicopters buzz by and machinery grinds away at rock. This is hardly an environment for accurate baseline data, especially regarding goats and their behavior in the area. The marine studies barely touched on salmonids and their use of the near-shore environment, which is crucial to the gillnet fishery. Modeling for the outfall sewer was completed without thorough studies of currents and tides, unique in this area of Lynn Canal. All "exploratory" operations must cease until these studies are completed in an unbiased and undistorted manner.

Until Kensington Venture proves to be a responsible corporate neighbor worthy of conducting business in our unique and pristine environment, we recommend the NO ACTION alternative. We have too much to lose and nothing to gain from an industrial fiasco. We hope that the Forest Service will uphold the highest standards, and weigh the impacts for the good of the public, in overseeing the proposal for the Kensington Gold Project. Thankyou for the opportunity to comment.

Sincerely,


Thomas Ely
President

cc:

Dick Stokes - DEC
SEACC
Rep. Jerry Mackle

110.7

Please see responses no. 100.1 and 117.96.

CEQ regulations require that an EIS provide a description of the existing environment potentially affected by the proposed action. In this case, the description of existing environment encompasses the effects of past mining and exploration, although these effects may not be thoroughly understood for all resources. Past mining and exploration activities may have had an effect on mountain goats, but it is impossible to go back in time to re-create pristine, pre-disturbance conditions. Mining activity has occurred at the Kensington site off-and-on from late 1891 to 1938. Recent exploration activities have been ongoing since 1982.

110.8

We assume the concern expressed in this comment relates to the use of the nearshore environment by juvenile salmonids. This matter is addressed in FEIS Chapter 3.

The utilization of these waters by larger salmon would be similar to other areas where salmon are migrating to their home streams. Because of their location in the water column and their tendency to be migrating through the area, they would have virtually no exposure to concentrations of substances higher than deemed safe (as indicated by water quality standards) for indefinite exposure.

110.9

Please see responses no. 5.2 and 93.75.

Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

Enclosed are comments and questions arising from my review of the Draft Environmental Impact Statement (DEIS) for the proposed Kensington Gold Project, near Juneau. Thank you for extending the period to respond to the DEIS, and allowing me to comment.

While significant efforts have been made, I do not believe the DEIS meets the requirement of the National Environmental Policy Act (NEPA) to adequately describe the impacts of, and reasonable alternatives to, the proposed action. The DEIS should, in my opinion, be redrafted for public review after environmental baseline studies are completed, alternatives to the preferred tailing impoundment and mixing zone are discussed in more detail, and responsibility for monitoring and/or mitigating for long-term impacts of the proposed actions are clearly specified.

Specific inadequacies which I request be addressed in detail in future impact statements for this project include:

1) In the Abstract of the DEIS the USDA Forest Service (USFS), the agency preparing the DEIS, states 'Tailings would be disposed in a conventional tailings impoundment located in Sherman Creek Basin'. Similar language (i.e., 'Conventional Tailing Disposal') is used throughout the DEIS (eg. P. 2-11) to described the tailings disposal method. I question the assertion that constructing a temporary dam across a river valley which contains critical habitat for fish and wildlife, diverting streams into culverts and concrete channels (Sherman Creek and Ophir Creek), then burying the river valley in 265 feet of finely divided sediments and toxic substances (eg. cyanide, etc.) is a 'conventional tailing disposal' method. Please provide supporting evidence that these methods are in fact 'conventional' (ie., in general use) in North America. I assume the USFS is, in citing this method as the 'preferred alternative' for this project, accepting the method for general use in the Tongass National Forest. Is this true? If this is not true, what circumstances make the proposed method of disposal acceptable at this site?

2) The DEIS (P. 2-8) states 'Alkaline chlorination represents the best available treatment process for cyanide destruction at Kensington (Lakefield Research, 1990)'. I understand this process is not the best technology available for removing cyanide, and in general use also results in significant discharges of toxic compounds containing chorine. In the recently released DEIS for the proposed Alaska-Juneau Mine, a newer (SO₂/AIR) process was selected. What are the expected advantages and disadvantages of the three cyanide destruction processes listed in the DEIS? Why was the alkaline chlorination method selected for the Kensington Project? Is the selected process (alkaline chlorination) expected to provided the smallest discharges of cyanide and other toxic substances into the

111.1
Please see responses no. 5.2 and 98.8.

111.2
As discussed in DEIS Chapter 4, the proposed tailings dam would be a permanent structure designed using a modified centerline construction technique. Experience has shown dams using centerline construction techniques to be stable under high seismic loads. All seismic failures of tailings dams reported in Vick (1990) have occurred in dams employing upstream construction techniques subjected to strong seismic shaking.

The EIS analysis has shown that no critical habitat for fish or wildlife exists at the location of the tailings dam in Sherman Creek.

111.3
Each proposal for mining on Natural Forest System lands is evaluated on its individual merits. The logic for selecting an alternative will be discussed in the Record of Decision. The decision will be based on the analysis of environmental consequences found in FEIS Chapter 4.

111.4
Please see response no. 93.52.

111.1

111.2

111.3

111.4

111.4	environment? If the SO ₂ /AIR or Hydrogen Peroxide process would provide for smaller discharges of toxic substances and maintain better environmental health (with respect to fish and wildlife) and safety (with respect to man), why is the alkaline chlorination process being selected? Is the process being proposed because of its low cost relative to other technologies? I assume the USFS is, in citing this method as the 'preferred method' for this project, accepting the method for general use in the Tongass National Forest. Is this true? If this is not true, what circumstances make the proposed method of treatment acceptable at this site?	
111.5	3) 'Alternative E - Dewatered Tailings' (P. 2-39) is missing the details required to fairly evaluate this option. Why are the advantages and disadvantages of this option not described? The brief comments in 'Comparison of Alternatives' (P. 2-49 through 2-55) are grossly inadequate for describing and comparing this option. Similarly, the comments in 'Effects of Alternative E' (P. 4-11 and 4-25) do not adequately describe the consequences of the alternative. Not developing this option is a major flaw in the DEIS.	111.5 Cyanide destruction processes are dependent on the mineralogy of the deposit and the technique used for processing the ore. The Record of Decision will identify the selected cyanide destruction method
111.6	The DEIS should discuss in detail how tailings disposal under the preferred alternative (B) differs significantly from disposal under Alternative E (Dewatered Tailings). Both 'piles' of tailings become 'dewatered' after the project is completed. Thus, two major differences between the two options are: a) in the method used to place the tailings in piles, and b) the final location of the piles. Under Alternative E, the tailings would not be placed in existing stream beds (the river valley), and leaching and long-term migrations aside, the long-term consequences of the alternative may be less environmentally destructive. Please include analysis and discussions of these points in the next EIS.	111.6 The discussion in Chapter 2 is a brief summary and should not be relied on for a detailed understanding of the analysis in Chapter 4. Chapter 4 of the FEIS contains additional discussion of dry tailings that did not appear in the DEIS.
111.7	4) The section 'Surface Water Hydrology' (starting P. 4-13) needs to include enough details of the analysis used to project process effluent and freshwater quality characteristics to judge the efficacy and validity of the analysis. Integration of the results of the analysis by HDR (1990) into the presentation might for example help explain the results presented in this section. Why, for example, are 2 hr, 48 hr, and 10 day decant values used to calculate mean values for mill effluent in Table 4-9? Were samples from longer time periods not employed in the analysis? Are there no increasing concentrations of dissolved substances measured in the decant samples over time? Were other important assumptions made in the analysis to project maximum seasonal concentration of pollutants in fresh waters?	111.7 Comments regarding long term consequences of the preferred alternative vs. Alternative E - Dry Tailings are noted. The FEIS provides additional information and analysis of each alternative.
111.8	5) The section 'Aquatic Resources - Marine' (starting P. 4-26) assumes a mixing zone of significant proportions in Lynn Canal. Why isn't the need for a mixing zone discussed? Is technology available to reduce the size of the mixing zone, either through better treatment of the effluent or a better diffuser design?	111.8 Please see DEIS Chapter 4, Surface Water Hydrology, Mill and Tailings Pond Effluent Characteristics. The decant test analyses generally showed decreasing concentrations with time. All assumptions used in the mass balance analyses are found in the footnotes to Table 4-9.
111.9	Projections for total suspended solids (TSS, P. 4-28) could be made using a worst case scenario. What is this scenario? How would Kensington Venture deal with this case?	111.9 It is incorrect to assume that the mixing zone volume will constitute a significant portion of Lynn Canal. The calculations underlying the environmental impact analysis presented in Chapter 4 of the FEIS (see also technical support document Kessler and Vigers 1992) indicate that mixing zone volume will never exceed 1/1,000,000th of the volume represented by Lynn Canal north of Pt. Sherman (and even less for Lynn Canal as a whole). Optimizing the diffuser design can reduce the volume, shape and depth distribution of the initial mixing zone. However, it can never eliminate it entirely. The purpose of the diffuser performance analysis presented in the FEIS is to test the overall ability of a typical diffuser concept to ensure compliance with water quality objectives. It is not to provide an optimized diffuser design. The latter requires a commonly agreed upon prioritizing of environmental issues (i.e., optimized terminal achieved dilution vs. optimized trapping depth), that has yet to be carried out.
111.10	Adequate biological baseline data (seasonal distribution and abundance, and tissue analysis) for the economically important species in the affected environment is needed to allow possible significant effects of the project to be quantified (if they occur), or effective	
111.11		

While the ambient standard for certain wastewater constituents will be exceeded within the mixing zone, a direct comparison must be tempered by the fact that corresponding calculated residence times in the mixing zone are thousands of times shorter than the (chronic effects) exposure times used to establish the ambient water quality standards.

111.10

The assessment of total suspended solids effects, missing from the DEIS, have been included in the FEIS. Refer to Chapter 4 of the FEIS for a discussion and to the technical support document Kessler and Vigers (1992) for a more complete technical analysis. The analysis indicates that no measurable total suspended solids effects can be expected even under worst case conditions.

111.11

The EIS used guidance from CEQ regulations in determining what information to include in the document. The regulations state that "[t]he environmental impact statement shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives." (40 CFR 1502.15) The regulations further allow that information be incorporated into the EIS by reference to reduce the volume of information presented in the analysis document. The EIS incorporates extensive information by reference. Pertinent information is available for review in the planning record located at the Juneau Ranger District.

111.12

The DEIS did not assume that the streams upstream of the tailings dam would be fully restored to pre-project productivity levels, though that might occur.

The DEIS stated on page 4-39 that "the effectiveness of the proposed plan for making the site suitable for fish production would depend on site stability and water quality. The Applicant's conceptual reclamation plan for the tailings impoundment would provide an opportunity to evaluate the design and reclamation methods for these types of projects." Instead of asserting that full productivity would be restored, the DEIS states that it is uncertain as to what level would be reclaimed.

mitigation to occur if needed. I do not see this material detailed in the DEIS. All baseline studies should be presented for public review in an EIS. Is this not true?

111.11

6) Under the preferred alternative the DEIS appears to assume Sherman and Ophir Creeks will be reestablished then maintained at a state of productivity (with respect to supporting fisheries and wildlife) similar to that existing prior to the project. How will success of this assumption be judged? What measures will be taken if this is not possible?

111.12

'Long-term commitments' and 'long-term maintenance' of the erosion protection measures (geotextile fabrics, riprap channels, overbank flood flow containment structures, etc) are acknowledged to be required as a part reclamation efforts. Please define 'long-term' explicitly. Will the USFS assume responsibility for this long-term monitoring?

111.13

7) Define the abbreviation 'PMF' on P. 4-77.

111.14

8) The DEIS does not provide information about the concentrations and total quantities of cyanide and other toxic substances that will be placed behind a tailings dam or stored in piles under the proposed alternatives. I believe the DEIS is inadequate for not disclosing this information, for not discussing where the responsibility for these materials rests after the project is completed, and for not providing estimates of costs and liabilities associated with managing these materials to insure the health of fish and wildlife, and public safety into the foreseeable future.

111.15

Sincerely:



Robert Marshall

P.O. Box 211461

Auke Bay, Alaska 99821

cc: Alaska Department of Environmental Conservation
Environmental Protection Agency, Region 10
U.S. Army Corps of Engineers
Senator Jim Duncan
Representative Fran Ulmer
Representative Bill Hudson
Southeast Alaska Environmental Council

It is expected that losses in production may need to be mitigated, both during the period of mine operation and for any permanent losses that occur as a result of limitations in reclamation efforts. Fish populations and habitat within the reaches that would be affected were inventoried through intensive surveys in the summer of 1991. These data will serve as benchmarks for evaluating mitigation and reclamation efforts. Survey results are summarized in FEIS Chapter 3. The stream reaches that would be affected upstream of the tailings dam are, in their natural condition, quite unproductive.

111.13

Long-term, as used here, refers to perpetual maintenance needs. The Forest Service will be responsible for monitoring and maintenance after bond release. Funding will be provided by a financial instrument funded by the Kensington Venture and acceptable to the Forest Service. Also see response no. 7.5.

111.14

The probable maximum flood (PMF) is defined as the largest flood that can reasonably be expected to occur on a given stream at a selected point. Determination of the PMF is based on consideration of the chances of simultaneous occurrence of the maximum of the several elements (humidity, temperature, dewpoint, wind, geography, soil moisture, etc.) or conditions which contribute to the flood.

111.15

The DEIS describes in detail (Tables 4-9 and 4-11) the concentrations of numerous substances that will be found in the tailings pond. Concentrations are far more important in understanding the potential effects of toxic substances than are total quantities. The Kensington Venture will be held responsible under CERCLA, in perpetuity, for regulated toxic substances on site.

ECHO BAY MINES

KENSINGTON VENTURE
3100 CHANNEL DRIVE, SUITE #2
JUNEAU, ALASKA 99801
TELEPHONE: (907) 463-5701
FAX: (907) 463-5740

September 3, 1991

Mr. Ken Mitchell
District Ranger
JUNEAU RANGER DISTRICT
8465 Old Dairy Road
Juneau, Alaska 99801

Subject: Comments to Kensington Gold Project Draft Environmental Impact Statement (DEIS)

Dear Ken:

The Kensington Venture (the Venture) has reviewed the DEIS for the proposed Kensington Gold Project. The following general and specific comments are provided for consideration in preparing the Final EIS.

Overall, the DEIS document is clearly written and easily understood. The format used is highly graphic and meets a key objective of the National Environmental Policy Act of 1969 (NEPA) which is to provide a concise, issue-oriented document. We believe the inclusion of the Applicant Proposal (Appendix A) greatly improves the DEIS. This allows the reader to compare operating details and the overall environmental management program proposed by the Venture with alternative operating scenarios described in the environmental analysis. The inclusion of conceptual monitoring, spill contingency and reclamation activities provides the reader with an improved awareness of our commitment to develop an environmentally sound project. These concepts will be expanded once the Selected Alternative is identified by the Forest Service (FS) and their third-party contractor ACZ in the Final Plan of Operations. More specific comments which represent input from the Venture's Engineering and Environmental Groups follow. Other operational and environmental considerations needing technical clarification are included as Attachment 1.

1) The Venture does not concur with the DEIS proposal to relocate the power plant away from the main process plant. Key considerations are:

- Transmission losses due to the longer power line do not make planned waste heat recovery feasible.

112.1
Comments noted.

112.1

September 3, 1991
Mr. Ken Mitchell
Page 2

- The lost heat opportunity will require the Venture replace two 22,000 Lb/Hr. waste steam boilers with diesel or electric heaters requiring more power generation, fuel use and result in increased air emissions.
- The visual impact of the power plant at the new location will be greater than the site adjacent to the processing plant.
- Potential fuel spills in the upper Sherman Creek basin can be efficiently diverted into the tailings impoundment for cleanup under the proposal currently planned by the Applicant.
- It is safer and more efficient to monitor and control the facility if it is located immediately adjacent to the processing facility.
- The Venture is prepared and intends to implement those mitigation measures necessary to attenuate noise from the power plant at the main process plant location. The DEIS is incorrect in identifying the power plant as the largest or "dominant" noise source. It is a continuous source measured as less than 1 dBA above the assumed background level at all receptor sites. Continuous low noise levels have not been shown to impact goat or bear populations.
- The Applicant's proposed location would save about \$55,000 in capital costs and \$230,000 per year in operating costs over the location selected by the FS. This represents a net present value (NPV) of \$1.2M at a 15% discount rate.

2) The Applicant does not agree with the proposed riprap spillway. Our consultant, Knight and Piesold Ltd. (K & P), has reviewed the FS proposal and concluded that 95% of all earthen embankment tailings impoundments in North America incorporate concrete spillway design into the overall tailings dam design (see April 22, 1991 letter, Attachment 2). Problems with the riprap alternative design include:

- Availability of large competent and hard boulders in the quantity required. A six ton diorite boulder, for example, is approximately 4ft x 3ft x 5ft in size. This would require significant blasting and quarrying onsite -- provided a source can be located. The cost and feasibility of off-site barging, not to mention availability, also is not reasonable. (see April 22, 1991 letter for quantities).

112.2

Comments noted.

112.1

A-284

112.2

- A reinforced concrete spillway will provide better long-term reliability and be less susceptible to accumulation of ice and log jams.
- EBA, the third-party consultant selected to conduct the State Dam Safety review for the Alaska Department of Natural Resources (DNR) concurs with the K & P design concept, and provides the following recommendations: a) the spillway walls should be designed to include stiffer corners using rebar, with the final channel also supported with compacted earth; b) the spillway should be designed for a long projected life; c) the concrete density should be 4500 psi; d) a fiber or mesh reinforcement should be employed to control surface cracking; and e) the overall structure should be kept at depth (supported in a soil embankment).
- EBA has also proposed stringent operation and maintenance requirements during operation, reclamation and closure including a secondary emergency spillway on the left bank. Detailed comments by EBA including their design review can be supplied to the FS through DNR or the Venture.
- The spillway is on a slope which lies at a gradient of approximately 15 percent. As such, it has a very high energy profile. The size of the spillway channel is determined by, among other things, the friction factor, or roughness, of the channel. By increasing the friction factor of the channel, through the use of riprap instead of a concrete lining, its size will increase correspondingly.
- Because the spillway is a high energy stream, the riprap will have to be large, five tons or more, and very durable, that is free of joints, fractures or other planes of weakness. Such riprap is difficult to obtain in quantity and is very expensive. No source of such material is known to exist at the Kensington site.
- The necessity of having a larger spillway cross section and the necessity of the large size riprap could make the cost of construction with riprap two to five times that of cast-in-place concrete. K & P has estimated the cost of the concrete lined spillway at approximately \$1.3 million in 1990 dollars.

3) The Venture does not agree with the DEIS conclusion that underground grinding will better meet the objective of reducing onsite noise impacts to the

112.2

A-285

112.3

112.3
Comments noted.

September 3, 1991
Mr. Ken Mitchell
Page 4

local goat, bear and other wildlife populations for the following reasons:

- Noise abatement is better tested and proven and more cost effective and efficient when applied to above ground facilities. Additional information can be supplied to the FS by the Venture, if necessary.
- Hydrogeological and groundwater conditions in the vicinity of the underground mill excavation proposed in the FS Preferred Alternative will likely result in significant increased underground mine drainage flows.
- The total area of aerial disturbance for an above-ground facility is minimal.
- Underground milling creates operational problems. For example, mill personnel will be required to work no more than 8 hour shifts, in order to be compatible with the rest of the mill workers at the surface facilities. All other underground employees will work 10 hour shifts daily.
- Locating the facility underground will introduce increased safety and training concerns for mill operators.
- Maintenance of the slurry pipeline from the mill to the flotation circuit and provision for rotation, cleaning and power interruptions are more difficult than for the above ground option.
- Potential future expansion of the mine and mill, if additional ore is discovered, would be more expensive, less efficient and perhaps not feasible.
- NEPA regulations require that alternatives must be reasonable and financially feasible; underground grinding is not currently considered cost-effective.

- 4) As discussed in the DEIS, during the initial construction/startup phase of the project the Venture will utilize diesel generators to provide power to the project while the LPG fuel storage and generation facilities are installed. The DEIS should describe:

112.4

You will find an expanded discussion of air quality impacts during construction in Chapter 4 of the FEIS.

112.3

112.4

- The total SO₂ and NO_x emissions during this period would not trigger Prevention of Significant Deterioration (PSD) requirements.
- Further, Industrial Source Complex and Complex I modeling indicate that emissions from the diesel engines will not exceed PSD Increments, as the meteorological data indicates wind is channeled down valley thereby transporting these pollutants over Lynn Canal west of the project.
- Safety concerns over diesel storage related to potential for explosion are considered less than for LPG.
- A Spill Prevention Countermeasure Control Plan SPCCP will be implemented at the project site; this plan must be approved by the U.S. Environmental Protection Agency (EPA).
- Diesel power generation is economic during this interim period.
- The DEIS should also compare capital and operating costs of using diesel fuel generators during operation with LPG, as well as the air pollution trade offs associated with those costs. Diesel generation could also be used as a backup energy source for LPG.

112.4

A-287

5) The Venture has applied for and is technically and legally entitled to a reasonable mixing zone for discharge of excess or net precipitation and mine drainage from the project. The DEIS clearly and conservatively demonstrates a "no effect" scenario for the allowable discharge. The DEIS should incorporate more discussion of what a mixing zone is from both a technical and legal point of view, describe ADEC criteria for a mixing zone, set forth the assumptions used to estimate the quality of discharge, and the safety considerations built into those assumptions, describe the behavior of the effluent plume as well as exposure of living organisms to the plume, and set out the ultimate fate of trace suspended solids and metals discharged.

112.5

112.5
Please see the analysis presented in FEIS Chapter 4 for further discussion on the mixing zone.

6) Many comments received at the DEIS and Draft NPDES hearings involved concern over the effectiveness of alkaline chlorination for cyanide treatment. All treatment will occur by batch, with each batch carefully treated and monitored prior to discharge to the tailings impoundment. Both alkaline chlorination and treatment by INCO SO₂ were studied during the pilot metallurgical testing with equal effectiveness. The "batch discharge" will

112.6

112.6
Thank you for the additional information.

September 3, 1991
Mr. Ken Mitchell
Page 6

involve about 150 tons tailings concrete with a cyanide content of less than one (1) mg/l discharged in a blending routine with about 3850 tons of flotation tailings, providing this amount of dilution. Existing rainwater in the pond will further dilute this concentration. The natural processes of biodegradation, evaporation, volatilization, oxidation, etc. will continue to break down the remaining cyanide to levels essentially nondetectable. The Venture is compiling an annotated bibliography on cyanide treatment including natural degradation processes. This information will be provided to the FS for use in preparing the FEIS. Enclosed as Attachment 3 is additional information on cyanide treatment. No residual free chlorine will be available for discharge from the pond. The currently approved cyanide level for tailings ponds in most states is 50 mg/l. No studies have shown toxic effects to birds and migratory waterfowl at levels below 20 mg/l, to the best of our knowledge. The attached information also provides case histories of natural degradation of cyanide in the environment.

7) The Venture is currently conducting settleability tests for suspended solids (SS) at two tailings facilities designed by K & P. These tests will consider stable and upset milling considerations. The results will be available to the FS for evaluation and inclusion in the FEIS.

8) The Venture is also conducting suspended solids modeling for the difuser system. This includes behavior of SS in the plume and depositional considerations. The result will be available to the FS for evaluation and inclusion in the FEIS, as appropriate.

9) The Kensington Venture has reviewed the feasibility of moving the proposed discharge outfall. Without the benefit of a detailed engineering design study, our preliminary analysis indicates that the discharge could possibly be moved to the south of Sherman Point, as proposed by several of the hearing commentators. Details of the marine outfall design are currently being developed by the design engineer. They will consider substrate type, composition, grade and minimum bedding criteria, anchoring requirements and operation and maintenance requirements. A detailed monitoring program is also currently being developed by the Applicant, based on anticipated NPDES Permit requirements.

10) The discussion on Echo Cove Terminal should tie into the joint facilities discussion which addresses the potential to extend the Kensington adit through the mountain connecting the Johnson Creek side, linked by road to a dock at the mouth of Slate Creek. This could potentially be used as a

112.7

Thank you for the additional studies.

112.8

The FEIS in Chapters 2 and 4 includes analysis of an outfall location south of Point Sherman.

112.9

The possibility of backup transportation use is included in Chapter 2 of the FEIS under Slate Creek Cove Common Facilities.

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112.9

September 3, 1991
Mr. Ken Mitchell
Page 7

backup transportation network for bad weather and emergency connections to the mine in the event that a mine is constructed at the Jualin site in the next three to five years.

112.10 (11) We have provided additional socio-economic information prepared by the McDowell Group attached as Attachment 4.

We appreciate the opportunity to comment on the DEIS, and look forward to providing any supplemental information related to operational/environmental programs at Kensington.

Sincerely,



Rick Richins
EIS and Permitting Manager
Kensington Venture

112.10
Thank you.

Attachment 1

OTHER POINTS OF TECHNICAL CLARIFICATION

- 1) (pg 5-12) During construction fuel barges will be landing/loading at least 3 times a week -- once per week during operation.
- 2) (pg 5-14) Same clarification for helicopter trips during construction (workers, management, development miners, inspectors, FS personnel, etc.)
- 3) (pg 1-1) Mine life is approximately 12 years.
- 4) (pg 2-6) It should be noted that the sizes and horsepower ratings for the grinding circuit are approximates.
- 5) (pg 2-7) The planned process does not involve filtration/thickening of leached tails.
- 6) (pg 2-15) The flight frequency of helicopters during construction would be expected to be more than during operation. Current estimates are at least three daily flights.
- 7) (pg 2-16) See earlier comments regarding use of diesel generated power during construction.
- 8) (pg 2-16) LPG fuel would be stored at the marine terminal in a large metal sphere (76 foot diameter) holding approximately 300,000 gallons, and a 20,000 gallon tank at the mill. The Venture may also store LPG in a series of smaller "bullet tanks".
- 9) (pg 5-17) Refer to Table 2-2. Please see revised listing of chemicals and reagents. These were developed as part of the ongoing Feasibility Study.
- 10) (pg 5-18) Rock quarry sites will be developed throughout the project site where suitable materials and quantities can be excavated.
- 11) (pg 2-29) The discussion on Air Transport should also address the potential to develop an alternate heliport site on private land near the end of the road at some point during the life of the project.
- 12) (pg 2-30) See earlier comments regarding diesel power generation.

112.11

A-290

112.11
Thank you.

Attachment 1
Page 1 AREVISED TABLE
2 - 2LAYDOWN AREA
REQUIREMENT.

BASIS: 4 DRUMS = 1 PALLET $26' \times 6' = 36 \text{ ft}^2$
 BIG BAG = $5' \times 5' = 25 \text{ ft}^2$
 CI CYLINDERS = $3' \times 7' = 21 \text{ ft}^2$
 GRINDING MEDIA = 3' High.

KENSINGTON GOLD PROJECT 21196
 A SUMMARY OF THE MAJOR PROCESS PLANT CONSUMABLES (PRELIMINARY BASIS)
 TAKEN FROM THE PROCESS DESIGN CATERPILLAR FOLLOWS: A.G.
 MAY 3/91.

TAKEN FROM THE PROCESS DESIGN COSTS: A.G. MAY 3/91.							ISOTAPER = 7' x 22' = 154 ft ² 20' x 100' BAG + 1 Pallet = 6' x 6' = 36 ft ²						
DESIGN SECTION	ITEM	CONSUMPTION QUANTITY	UNIT	ASSUMED SHIPPING CONTAINER	PER DAY	GO DAY	INITIAL CHARGE	UNITS	COST	PACKAGED CONTAINERS	QUANTITY	UNITS	CONSUMPTION RATE (lb)
SIERRA CHEMICAL	7.1	LIME	4600	lb/day	2000 "BIG BAG"	2-3	180	3 DAYS	13,800	lb	0.06	1b	138 BB
	7.2	CYANIDE	1630	lb/day	32,000 "BIG BAG"	1/20	3	1 CYLINDER	32,000	lb	0.12	1b	3 I
SIERRA CHEMICAL	7.3	CANSTIC	400	lb/day	55 gal. DRUMS 400 lb/DRUM	1	60	3 DAYS	1,200	lb	0.40	1b	15 P
SIERRA CHEMICAL	7.4	ACID	120	gal/day	55 gal. DRUM	2-3	140	1 TANK	550	gal	1.00	gal	35 P
NEO-360 CHEMICAL 500-430-865	7.5	XANTHANE	2000	lb/day	DRUM 230 lb/DRUM	6	364	3 DAYS	6,000	lb	0.90	1b	91 P
BOURNE 260 517-636-100 1-1375	7.6	FROTHER	800	lb/day	55 gal. DRUM 450 lb/DRUM	2	120	1 TANK	4,500	lb	0.12	1b	27 P
SEGO INTERNATIONAL 503-796-1133	7.7	LEAD INHIBITOR	540	lb/day	55 gal. DRUM	1	60	3 DAYS	1,620	lb	0.48	1b	15 P
SIERRA CHEMICAL 702-350-0885	7.8	CHLORINE	8000	lb/day	100 CYLINDER	1	240	3 DAYS	24,000	lb	0.15	1b	240 C
	7.9	SUPERSTANT	70	lb/day	55 gal. DRUM	1 (est.)	60	3 DAYS	210	lb	1.50	1b	15 P
	7.10	SCALE INHIBITOR	150	lb/day	55 gal. DRUM	1 (est.)	60	3 DAYS	450	lb	0.85	1b	15 P
	7.11	WAG MILL GRINDING MEDIA	4000	lb/day	DRUM - 1400 lb	14 ft ³	840 ft ³	1 CHANGE	100,700	lb	0.15	1b	840 ft ³
	7.12	BALL MILL GRINDING MEDIA	6800	lb/day	DRUM - 1400 lb	24 ft ³	1440 ft ³	1 CHANGE	312,500	lb	0.15	1b	1440 ft ³
	7.13	RECORD MILL GRINDING MEDIA	800	lb/day	DRUM - 1400 lb	3 ft ³	180 ft ³	1 CHANGE	60,000	lb	0.25	1b	180 ft ³
	7.14	REFINING FLUX											
SIERRA CHEMICAL		• SODIUM NITRATE	216	lb/week	100 lb BAG	20	1 WEEK	216	lb	0.19	1b	1 P	36
SIERRA CHEMICAL		• BORAX (SEMI)	288	lb/week	100 lb BAG	25	1 WEEK	288	lb	0.48	1b	1 P	36
SIERRA CHEMICAL		• SILICA	216	lb/week	100 lb BAG	20	1 WEEK	216	lb	0.12	1b	1 P	36
	7.15	CARBON	100	lb/day	2000 lb BAG	3	1 CHANGE	54,000	lb	1.00	1b	3 BB	75

Attachment 1
Technical Clarification
Page 2

- 13) (pg 2-34) Rock quarry/borrow areas may also be required to be developed outside the areal extent of the tailings dam if sufficient suitable material is not found inside these confines.
- 14) (pg 2-43) See earlier comment on diesel power generation to be included under Air Quality Mitigation Measures.
- 15) (pg 2-46) The Kensington Venture is currently reviewing opportunities to enter into a joint research project with DNR's Plant Material Center to assist in the implementation of a pilot reclamation study. Other test programs being conducted by other companies throughout Southeast Alaska and the Pacific Northwest are also being reviewed by the Applicant for applicability at Kensington.
- 16) (pg 4-1) The FEIS should also discuss interim effects of the temporary use of diesel fuel and reciprocating engines for power generation while the LPG plant is constructed.
- 17) (pg 4-13) In the discussion of water supply, it should be noted that the Venture may use mine drainage water as a primary or supplemental water source.
- 18) (pg 4-14) As currently planned, the heliport will be served by a septic tank/leach field wastewater system.
- 29) (pg 4-19) The discussion on accidental spills should describe the cyanide treatment system which will mitigate the discharge of potentially toxic cyanide concentrations into Sherman Creek.
- 20) (pg 4-25) The discharge of underground water will be treated by settling in underground sediment basins prior to any discharge.
- 21) (pg 4-59) The Slate Creek Cove alternative could be expected to require fuel storage (diesel and LPG) at the docking site.
- 22) (pg 4-72) During construction, it is estimated that barge trips to the site for fuel, equipment and supplies would occur at least three times per week.
- 23) (pg 4-73) The Kensington Venture has entered into an agreement with DuPont to design and supply a prototype isolator for transporting

NaCN to the site. The construction/safeguards provided by this type of transport container should be described in more detail in the FEIS.

- 24) (pg 4-74) See the attached table for the refined reagent schedule for consumables. material storage criteria for most consumables are two to three months.
- 25) (pg 4-81) Table 4-26 should be updated based on current construction schedules and equipment lists the Venture has developed since the DEIS was published.
- 26) (pg 4-86) Again, some reference to temporary use of diesel power generation is required under the Air Quality section of Table 4-29.
- 27) (pg A-1) The Applicant will likely be required to develop rock material sources from available borrow sites outside the tailings dam "footprint" if the rip rap spillway option is selected.
- 28) (pg A-5) The Applicant intends to use diesel fuel for power generation during the construction phase of the project.
- 29) (pg A-6) Diesel fuel storage will involve approximately 300,000 gallons. Also, the fuel line sizes for distribution will vary, depending on final design specifications.
- 30) (pg A-8) Borrow material may be required for some road construction. Where necessary, balanced cut and fill will be supplemented with borrowing from an approved quarry.
- 31) (pg A-9) The Process Area Site Plan (Figure A8) has been slightly modified since issuance of the DEIS. This should be corrected in the FEIS.
- 32) (pg A-10) The Venture does not intend to install under-slab heating in the repair bays. This is not expected to be necessary. Also, please refer to earlier comments on diesel fuel and power generation.
- 33) (pg A-11) In the optimization studies currently being completed by the Applicant, a modification to the housing plan involved shared sleeping rooms and a bathroom in lieu of one bedroom/one bathroom per workers.

112.11

Attachment 1
Technical Clarification
Page 4

- 34) (pg A-19) Please refer to earlier comments regarding reagent use.
- 35) (pg A-20) Please see earlier comments related to NaCN isotainers.
- 36) (pg A-29) Please note that the original Projected Project Schedule has changed significantly.
- 37) (pg A-30) Under Carbon Desorption and Reactivation, the first sentence should read: "The carbon facility is located inside the process building adjacent to the flotation area."
- 38) (pg C-1) Tailings dam construction specifications do not require that the entire site is completely cleared of all trees and vegetation. Vegetation would be left in certain specified areas, except for all borrow sites.
- 39) (pg F-2) Please see earlier references to isotainers.
- 40) (pg F-3) The sodium cyanide sumps will be concrete lined and sealed, not constructed of plastic liner.

112.11

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Mr. Rick Richins
Coeur Alaska
#235 - 8800 Glacier Highway
Juneau, Alaska
99801, U.S.A.

YOUR REFERENCE
OUR REFERENCE
NUMBER

3286.01
1/0490

April 22, 1991

Dear Rick,

Re: Alternative Rip Rap Lined Spillway Chute

A rip rap lined chute was the first option evaluated for the spillway chute. It was not considered the best option because of difficulties arising from the Design Flow (1860 cfs) and the steep terrain (Minimum 9 percent, Maximum 20 percent slope). The design tables first used indicated a median riprap size of 12 feet, however a second method indicated a 4 feet median diameter rock would be suitable. Both methods required extrapolation of the design graphs which adds to the uncertainty.

Assuming that the 4 feet diameter is satisfactory, a typical section was drawn up and is attached as Figure 1. The design consists of a main channel section with rip rap designed to resist velocities up to 22 ft/s. A freeboard of 2 feet is provided, above which a further 5 feet of secondary rip rap is provided (up to the energy depth) to accommodate splash. Below the rip rap there is a filter zone, which will require at least two stages and be 3 feet thick minimum, dependent on the filter relationship required.

112.12
Thank you.

It should be noted that the last 140 feet of the chute has a gradient of over 50 percent for which the use of a riprap lined chute is impossible. At this point, either a concrete chute or a shotcrete lined cut into bedrock will be required. There is no evidence that bedrock exists at the required elevation, although a 25 feet vertical drop to the creek bed exists, which will require some alternative system of energy dissipation in lieu of a flip bucket.

The following table gives the quantities required for the first 1,640 feet of the chute where a rip rap lined section is feasible:

	Volume (yd ³)
Excavation	28,000
Fill	28,000
Main rip rap (4500 lb)	26,000
Secondary rip rap (600 lb)	5,500
Filter zone	21,000

Rip rap must be fresh, competent, durable rock that will be resistant to mechanical and geochemical weathering.

At this stage, it is not known if a suitable quarry can be developed at the site, or if the larger boulders will have to be imported.

For both rip rap lined and concrete spillways, inspection and maintenance will always be required. A concrete chute would provide fewer opportunities for accumulation of ice and log jams but may be considered less durable than rock.

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Association
of Consulting
Engineers
of Canada

Provision for access to the chute in low flows for inspection and maintenance will be required.

Yours very truly,
KNIGHT AND PIESOLD LTD.

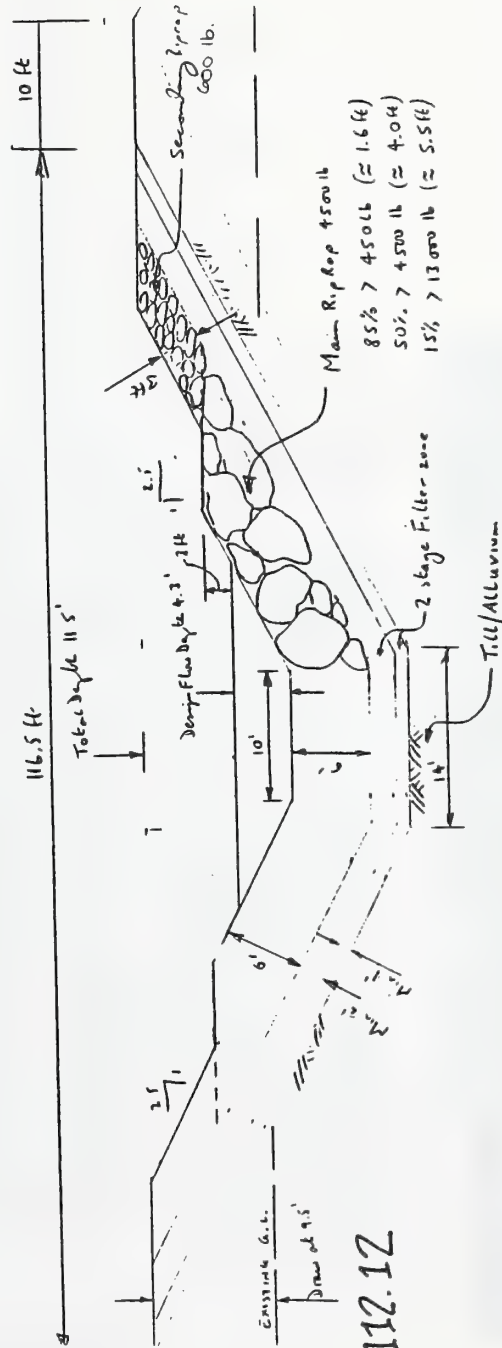
112.12

J. Haile

J.P. Haile, P.Eng.
President

DJB/am
Encl.

A-297



112.12

Typical Section through riprap lined chute



Dedicated to Clean, Healthy Economic Diversity in the Capital City
September 3, 1991

Mr. Ken Mitchell, District Ranger
U.S. Forest Service
8965 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

Alaskans for Juneau, a citizens' group opposed to plans to re-open the Alaska-Juneau mine, is pleased to have the opportunity to comment on the Draft Environmental Impact Statement for the Kensington Gold Project.

Although the Kensington is approximately one-fifth the size of the A-J and does not directly impact the immediate downtown area of Juneau as the larger mine does, there are several specific elements of the Kensington which concern the group.

In general, we are very concerned about the cumulative effects of the Kensington development with other mines in this vicinity. Further, we are dramatically aware of the precedent being set with the opening of the Kensington and how that may affect the A-J or other large projects.

We hope the Kensington mine can be developed in an environmentally and economically sound fashion. Alaskans for Juneau is not taking a position for or against the mine at this time, but there are many parallels for both projects which concerns our group. These include:

1. There should be no mixing zone allowed in Lynn Canal, regardless of the location of the effluent discharge pipe in relation to Point Sherman. The Lynn Canal fishery must not be threatened by the permitting of toxic levels of discharge into the waterbody. All mine wastewater must be treated to meet water quality standards without the need of a dilution zone.
2. Water quality standards must be established which are more stringent than Gold Book standards and which represent the effects on local species. Sediments standards need to be established in order to regulate those sediments from the Kensington.
3. Further baseline studies are needed to determine the effect of the Kensington on marine and terrestrial species.

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Please see response no. 4.5.

113.2

Total suspended solids limits are set in EPA's New Source Performance Standards. (see 40 CFR 440.104). These standards are regulated under the NPDES Permit. Also see response no. 7.2.

113.3

Please see response no. 100.1.

4. The cumulative socio-economic impacts on Juneau need to be addressed. This project cannot be looked at in isolation. Page 4-68 of the DEIS projects an \$882,000 overall loss to the City and Borough, with the greatest costs being incurred in the early years when the highest demand for services exists, and when Juneau is least prepared to accommodate new residents, particularly school age children. Further study is needed of the socio-economic impacts of temporary shutdowns of this and other mines due to uneconomical mineral prices as well as the impacts of all projected mines closing at the same time.

113.4

Additional work has been done to assess the cumulative effects of developing and operating both the Kensington and AJ mines. Please see Chapter 4 of the DEIS.

5. The project must be required to use dry tailings disposal. Benefits to this method include: (a) the elimination of a toxic-contaminant tailings pond which is hazardous to birds and mammals; (b) the elimination of the need to re-route Sherman Creek and Ophir Creek, and the consequent reclamation proposal to return Sherman proposal to return Sherman Creek to flow through and leach out the heavy metals and chemicals from the tailings pond into Lynn Canal; c) the elimination of a dam in a seismic area prone to frequent earthquakes.

113.5

Early closure of the mine would accelerate the latter period socioeconomic effects as projected in the FEIS. The current City ordinance requires advanced notification of such an action and additional requirements are being considered to minimize the impacts of an unplanned shutdown of the mine.

113.5

Weather conditions at the project site would require a large temporary storage area for the dried tailings during rainy periods. Average annual precipitation data indicates that 52 days/year receive 0.25 inches or greater of rainfall and 48 days receive 1.0 or more inches of snowfall. The dried tailings cannot be placed during these periods due to moisture dependent pile stability concerns.

A-299
113.6

6. The USFS should establish a local citizens' oversight council similar to the statewide council created by the legislature in 1990 to provide continued public participation.

7. Self-monitoring by the company must not be the primary source of information. Funds must be provided for the independent third-party or government agency monitoring to give rapid, unbiased reporting.

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Chapter 4 of the FEIS contains an expanded discussion of the geotechnical aspects of dewatered tailings disposal as compared to conventional tailings disposal.

113.6
Comment noted.

113.7
Please see response no. 83.5.

We are also providing detailed comments regarding mental health and social service issues concerns as they relate to the Kensington DEIS. These are attached in the form of Appendix A.

In conclusion, we believe that several steps need to be taken to improve the Kensington project and minimize its negative impacts. We appreciate the chance to participate in the public process and to offer our suggestions. Juneau's future is of great importance to its residents; we are working hard to ensure that the lessons learned elsewhere are understood and not necessarily repeated to the detriment of our community.

Sincerely,

Laurie Ferguson Craig

Laurie Ferguson Craig
President, Board of Directors

Attachment: Appendix A

ALASKANS FOR JUNEAU: APPENDIX A

The Forest Service appraisal of the needs of the mine workers coming to Juneau for the AJ and/or Kensington mines indicates that these workers and their families may be in need of certain social services such as alcoholism treatment or mental health care. The Kensington DEIS report which describes the health care system as it currently exists in Juneau relies on out of date data and does not present difficulties in the current system in depth.

A. ALCOHOLISM TREATMENT. Juneau Recovery Unit, or JRU, is the only inpatient treatment and detoxification unit in Juneau. Even with the addition of several new detox and treatment beds in July 1991, it is still full and turning away those who need its services. On weekends, those needing medical detoxification from alcohol are being turned away from JRU due to lack of beds; they are usually then sent to Lemon Creek Correctional Center, a poor second for safe detoxification. Currently there is a waiting list of several weeks to a month for in-patient treatment at JRU; during winter months the waiting list may expand to several months. At ATS, the inpatient treatment center in Sitka, there is a waiting list of several months. At the centers which treat those with chemical dependency and a mental illness such as depression, there are also waiting lists of several months. These facilities represent what is available in Alaska for inpatient longterm care at public facilities. Even without the mine, they are overfull and Alaska's own residents are unable to get into them as needed. EBE must show how they are going to ameliorate the systemic problems which further overload would represent.

The Kensington DEIS notes that males 20-40 years of age would make up much of the workforce, and that this group is disproportionately represented in treatment centers. In addition, construction workers, who are predominantly young and male, have a higher risk of substance abuse than the general population. The fact that Kensington will have an on-site drug testing program is largely irrelevant if we are examining substance abuse and dependence. The testing program is designed to target those who are using while on the job, and has significant payoffs for the company when it comes to safety records and productivity. It has nothing to do with dependence on drugs or alcohol off the job, away from work, which is when most people with problems with chemical dependency use. It is misleading to imply that the drug testing program will prevent or "offset these factors" when it has nothing to do with them.

B. MENTAL HEALTH CARE. Since March, 1991, there have been several teleconferences held among the mental health professionals and agencies operating in Southeast Alaska. Scarcity of resources, both beds and personnel, are severe in the region; the conference sought ways to improve care. Juneau has only one psychiatrist with hospital privileges. The waiting list for a medication evaluation at the mental health center approaches 8 weeks. In four of the last five attempts to get Southeast patients admitted to Mt. Edgecumbe in Sitka, they have been turned away due to no bedspace, and sent instead to Anchorage. There is no child psychiatrist anywhere in Southeast Alaska. Mental health care does not just apply to those who are the

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Please see response no. 5.4.

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The FEIS has been changed to reflect the uncertainty of the age distribution expected in the work force. Also, testing for most drugs will reveal use that occurred for a considerable period (several days) prior to administering the test. Thus, drug testing would help identify those who abuse drugs off the job.

113.10

The EIS acknowledges the current shortage of mental health care facilities in Juneau.

chronically mentally ill, or the retarded, or those with severe depression. It also applies to those having marital or family problems, divorce, crying spells, domestic violence, life changes, loss of a loved one, recovery from sexual trauma, problems at a job, or a host of other difficulties encountered in life. These individuals under Alaska's mental health funding law come under "general mental health," the last category to be funded and the category into which most of the general public falls. The law indicates that emergencies, the chronically mentally ill, and severely disturbed children are all entitled to services BEFORE this last, less impaired category. If there is an overload on the system, as there is now, many of those requesting services for life's problems will not get them, or will be put on a waiting list, at public centers. The system is at this point now, in August of 1991, due to the needs of the severely ill coming before needs of the less ill. "One counselor" as posited in the AJ Impact statement, is not going to correct this imbalance, or address the systemic problems. The mental health outpatient system as a whole is currently overloaded, in part due to the priorities of the mental health laws, and these systemic problems must be addressed by EBE. The statement in the Kensington DEIS that "The Mental Health Clinic had a long waiting list in 1988," but this list could be reduced if the clinic were fully staffed" is (obviously) based on grossly out of date information, and fails to take into account that in 1991, it is fully staffed, and is also operating with an overload of patients. By listing JAMI and SEARHC as providers, the DEIS is somewhat misleading in implying that these agencies are available for routine mental health care. Juneau Alliance for the Mentally Ill (JAMI) is a subcontracting agency with the mental health center. Its function is to provide some residential and day treatment services to the chronically mentally ill after release from psychiatric hospitalization. JAMI services in 1991 are over capacity and JAMI has had to turn away many new referrals on outreach. Of note, JAMI does not have its own psychiatrist and must once again rely on the psychiatrist from the mental health center. JAMI then obviously is not a mental health service which treats those with general mental health problems: they are mandated by the State to accept for treatment only those patients with certain, "targeted" diagnoses. With respect to services provided by SEARHC, SEARHC physicians at times may prescribe drugs which can be classified as "psychotropic" medication. However, they refer most of their psychiatric patients to the mental health clinic for medication and therapy, and automatically when there is an issue of hospitalization, the mental health center is involved. Thus, SEARHC does not operate on an independent level with respect to mental health care in Juneau, and its staff does not include the services of a psychiatrist or a psychologist.

C. INSURANCE COVERAGE. At one of the summer AJ hearings, when confronted by questions of whether EBE was prepared to make payments up front to cover the drain that its workers would place on the entire SE Alaska system, Mr. Frank Bergstrom indicated that there would be insurance coverage for workers and that EBE would naturally have an EAP (Employee Assistance Program) for

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The City and Borough of Juneau Large Mine Permitting process will focus on socioeconomic impacts from this proposal. We suggest that you comment to CBJ during their review process.

113.12

Comment noted.

113.12

those with chemical dependency problems "as any responsible company would." The term "insurance" is too broad in this instance, and "EAP" may represent insufficient coverage. Let us consider in-patient psychiatric or chemical treatment, with stays ranging from 2-4 weeks. Costs range from \$8000-20,000, and most insurance only pays 50-80%. In addition, insurance usually does not pay travel (about \$500). There is NO inpatient psychiatric treatment in Juneau; anyone requiring this must fly out. Private insurance usually ends up paying for hospitalization in Anchorage, Seattle, or Portland. Alcohol treatment in Juneau, inpatient, consists of JRU. If an individual wishes to go private, again treatment is in Anchorage, Seattle, or Portland. Individuals may also choose private treatment because of the lengthy waiting list for the public programs. Most EAP programs do screenings for drug or alcohol problems: they do not do inpatient care, but may make referrals. The existence of such a program therefore, may be helpful as a referral source, but will not help when it comes to how that program, or the travel to get there, will be paid for. Given the high cost of inpatient treatment, it is easy to see how those needing it may be incurring a large debt, even with insurance. Often, for those unable to pay, the State is the payee of last resort, and also often pays for travel to the inpatient unit if the patient is unable. There appears a great potential for the State to incur large debts from inpatient care of those with insufficient insurance or ability to pay: this may well apply to those working in the mines, with or without an EAP referral program. Again, is EBE willing to put money up front to cover alcohol and mental health treatment of its workers in this state, including travel and inpatient care?

The Kensington DEIS mentions that the details of the insurance contracts available to workers are not known, but notes the likelihood of a 90 day exclusion for pre-existing conditions. Both substance abuse and psychiatric illness are by the very course of the illnesses, conditions which have multiple episodes. (See the American Psychiatric Association's Diagnostic and Statistical Manual, Third Edition). The DEIS also admits that such workers have a high turnover rate "and the high turnover rate for mine employees could lessen the effectiveness of this program." This heightens the need for money provided by EBE free and clear of any insurance policies to cover the high cost of providing medical care to its employees.

D. OTHER SOCIAL SERVICES. The Kensington DEIS notes that "during 1987-1989, the metal mining industry incurred injuries and illnesses at 2.2 times the State's industrial average." It goes on to say that inpatient hospitalization at Earle Memorial Hospital will not be a problem. However, the DEIS fails to consider the outpatient medical services available in Juneau in high-demand periods. There are several small groups of physicians in private practice in the Juneau area. Some of these practices, like Valley Medical Center, are closed; meaning they are not accepting any new patients. For specialty services such as orthopedic surgery, there are waiting lists of several months. During the flu epidemic in winter, 1990-1991, many practices were turning ill patients away and the emergency room had waits of

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Comment noted.

113.14

Comment noted.

113.14

several hours. This is not a system which has any room for expansion built into it. There are clearly concerns for Juneau residents in terms of ability to see the doctor of their choice (rather than be faced with a closed practice from too many patients) and concerns of a waiting list of several months for specialty clinics. When this was raised at a summer AJ hearing, Mr. Bergstrom indicated that Juneau could simply recruit, which would not be a hardship since it would mean more physicians would be available. Unfortunately, although this attitude may be appropriate for the lower 48, it fails to take into account the severe difficulty which Juneau has experienced in recruiting in recent years, for example, for a psychiatrist. EBE could consider the problems with available medical care as a reality and, for example, fund 2-3 full-time physician positions in the various practices, or fully fund specialty positions in the areas which miners most needs, such as orthopedic surgery and addictions. The Forest Service indicated that miners are likely to need more services, such as alcoholism treatment. Studies indicate that in families of those abusing alcohol, difficulties such as battering, violence, and problems in child welfare are also present. Child Protection services are currently overloaded, with caseloads averaging 90 cases per worker. Alcohol treatment and detox have been discussed above as being overloaded, not only in Juneau, but systemically. The AWARE shelter, which provides services to abused women and their children, is operating near capacity now.

We are focussing on practicalities of funding care for a population whose epidemiology predicts need for service in certain areas. EBE needs to address these problems directly, as well as clearly describe how they propose to compensate CBJ for adding materially to already overloaded systems.

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113.15

Please see response no. 113.9.

U.S. Forest Service
8465 Old Dairy Rd.
Juneau, AK 99801

Sept. 3, 1991

114

To whom it may concern:

I am writing to comment on the Kensington DEIS. I have included my comments on the NPDES permit dated 9/03/91 as part of my comments on the DEIS.

The baseline studies for the marine environment in the area of the project are inadequate. Additional studies should be done to determine the existing biological uses of the areas involved prior to issuance of a FEIS. Studies of a proposed outfall area must be conducted. These studies should include physical, biological, and chemical characteristics of the receiving water, including volume and flow rate. Receiving water is the marine water at the end of the pipe, not the water in a nearby area.

A "mixing" zone should not be allowed for this project. Treatment of effluent to state and federal standards at the end of the pipe is a must. Specific comments regarding this are attached in my NPDES comments.

Dry tailings disposal should be used instead of impoundment of tailings slurry. Use of dry tailings would significantly improve this project by greatly reducing wastewater discharge and removing the need for a dam. The proposed dam will create a significant visual impact on Lynn Canal and should be avoided.

Tailings should be backfilled as much as possible.

Helicopter transportation receives minimal attention in the DEIS. Helicopter noise is significant and will be a cause of major disruption to homes and recreation. This needs to receive more attention in the FEIS. All possible measures should be taken to reduce volume, number of flights and impacts on homes and recreation. Many people choose to live out the road in part due to the lack of noise associated with more populated areas. Similarly, recreation is more peaceful and less disturbed out the road. During the past several years, some of my favorite recreation areas (Perserverance Trail and West Glacier Trail in particular) have been heavily affected by summertime helicopter traffic. It is extremely disturbing to have helicopters fly overhead when out for a peaceful walk on a quiet trail. From my experience with Coast Guard helicopter noise, the bigger the helicopter, the bigger the disruption.

114.1

Please see response no. 5.2.

114.2

For the outfall as described in this FEIS, Lynn Canal is the receiving water. Lynn Canal is subject to winds, tides, freshwater inflow, salinity and temperature differentials, currents and eddies and other physical influences. We disagree with your assertion that the receiving water must be characterized by sampling one small sector of such a dynamic system.

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Please see response no. 4.5.

114.4

Please see response no. 7.4.

114.5

Helicopter traffic will add an incremental 2 to 4 trips per day to the air traffic in Lynn Canal. Currently there are an estimated 154 aircraft commuter flights passing overhead in Lynn Canal each day. Please see DEIS Chapters 2 and 4.

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During construction, there could be at least 20 flights per week just for regular crew rotations, not including site activities that require helicopter support. Food supplies are expected to require an additional one to three flights each week. The operations schedule would require a minimum of 10 flights per week, 52 weeks per year.

The minimum number of helicopter flights in a day will be one, except for weekends when no flights are scheduled. It is difficult to assess the maximum number of flights on any given day for a two year construction project and a 12 year mine life. Typically there will be at least three. The logistics of moving employees as well as other interested observers will be on an as-encountered basis.

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Disturbance of mountain goats by nearby helicopter flights has been well documented in the literature. Because of this disturbance, helicopter noise levels were modeled at selected black bear and mountain goat receptor sites. These analyses indicated that helicopter use would increase noise levels from 10 to 37 dBA at the selected receptor sites (see DEIS page 4-80). Based on these projections, ADF&G and USFS biologists input additional disturbance zones (beyond direct habitat disturbance) into the black bear and mountain goat HSI models. Therefore, the HSI estimated losses of habitat and habitat capability (see DEIS page 4-46 and page 4-48) take into account noise disturbance factors in addition to direct habitat disturbance. See also response no. 93.62.

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Flights will be allowed at any time the weather conditions for helicopter operation are met. Normally, flights will be scheduled only on weekdays and only during the day.

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Helicopter traffic is not expected to affect housing prices in Juneau.

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The proposed flight path for helicopters carrying employees to and from the project was aligned to provide maximum safety for passengers and to minimize noise impacts to residents of the area to the extent possible. It should be recognized that the perceived significance of noise will be dependent on the flight level of the aircraft. Flight levels are determined by weather conditions. Under good conditions most flights would be at a level of 2000 feet or greater. FAA minimum flight rules require that helicopters stay 300 feet above residential areas (Wilson, 1991). Under conditions of low ceiling, helicopters would probably fly lower to maintain visibility.

What is the maximum number of flights that will be allowed each day? What will be the minimum number of flights per day? Does that number vary from construction to operation phases? How will helicopters affect mountain goats and other wildlife? What times of the day will flights be allowed? How loud are these 15-20 passenger aircraft? Are helicopters of this size presently in use in the area? What other types of helicopters are available? What does the literature on helicopter noise say about its affect on residential areas? On recreation? How will helicopter transportation affect property values in the afflicted areas? How will homeowners be compensated for loss of property value or lifestyle disruption? How can disruption of recreation be avoided? Mitigated? Page 2-15 says that flight frequency will average 1-2 flights per day. Table 4-28 says that the project will create 96 additional flights per month. Please explain.

Figure 3-36 does not include helicopter noise levels. This should be included for the type of helicopter planned. Helicopters are predicted to be the second loudest noise makers for the project (Table 4-26). What type of helicopters were used to determine this? How would that figure (102 dBA) change with multiple helicopters?

The FEIS should include an index. Searching the tables of contents chapter by chapter is difficult and makes easily possible to miss a part or parts of the information on a subject.

The public comment period for the FEIS must not be scheduled for summertime. Having the public comment period in the summer has created a hardship for many if not most of the affected users of the area. In my family I am the only person who has been able to make the time to attend public hearings and prepare comments on this project. The other members of my family (a wilderness guide, a naturalist, and a commercial fisherman) are unable to comment on the DEIS because they are working. Scheduling of the public hearings and public comment period of the DEIS has minimized the amount and quality of public comment. The timing of the public comment period has greatly angered those who are unable to comment. To put it bluntly, we feel like we're being screwed. I would like the timing of the public comment period to be addressed in the FEIS.

Thank you for this opportunity to comment.

Sincerely,

Aaron Brakel

Director, Water Division (WD-134)
Environmental Protection Agency
1200 Sixth Avenue
Seattle, WA 98101

Sept. 3, 1991

Director, SE Region
Alaska Department of Environmental Conservation
Southeast Regional Office
Box 32420
Juneau, AK 99801

To whom it may concern:

I am writing to comment on the Kensington NPDES permit. I attended both the workshop and public hearing in Juneau and appreciated the opportunity to listen and ask questions at the workshop and testify at the public hearing. Unfortunately, the hearing and workshop were held on the first day of Juneau's biggest sporting event, the Golden North Salmon Derby. If this was intended to limit public comment it was very well done.

The NPDES permit should not include a "mixing" zone. All wastewater discharged from the Kensington project must be treated to the highest federal and state standards prior to reaching the marine environment. 18 AAC 70.032 states that a mixing zone may be prescribed unless

"(1) pollutants discharged could bioaccumulate; concentrate or persist in the environment; cause carcinogenic, mutagenic, or teratogenic effects; or otherwise present a risk to human health;"

The pollutants involved could persist in the environment, particularly in sediments near the outfall. Some of the pollutants in the effluent are known bioaccumulators. Discharge of these pollutants should be prohibited as should discharge of pollutants that cause carcinogenic, mutagenic, or teratogenic effects.

18 AAC 70.032. (b) "The water quality standards set out in this chapter may be exceeded within a mixing zone prescribed by the department. In determining whether a mixing zone is appropriate and the size of a mixing zone, the department will consider

(1) the physical, biological, and chemical characteristics of the receiving water, including volume and flow rate,"

The receiving water for the proposed discharge is the water the effluent would flow into at the end of the pipe. The nearest flow measurement station was about one half mile from

Flights would be during week days and would not cause significant impacts to recreationists. Note that flights would be scheduled during week days and daylight hours only. The only flights at night or during weekends would be emergency related. Please see the revised discussion of helicopter flight paths in FEIS Chapter 4, Noise.

114.11

Thank you for pointing out the inconsistency in the number of helicopter flights. It is projected that there will be 2 to 4 flights per day, 5 days per week. The appropriate corrections have been made to the text.

114.12

Please see the revised figure in the FEIS.

114.13

A table of contents and index have been added to the FEIS.

114.14

Please see response no. 110.6

114.15

Comment noted.

the proposed outfall. That water is not the receiving water. "Physical, biological, and chemical characteristics of the receiving water, including volume and flow rate" must be studied for consideration of a "mixing" zone whether it be at Sherman Ck., or south of Pt. Sherman.

114.16

The department must consider (18 AAC 70.032. (b)(2)) "the effects the discharge may have on the uses of the receiving water;"

114.17

In order to do this the uses of the receiving water must be known. Baseline studies must be designed and carried out that examine the uses of the receiving water particularly in regard to commercial fisheries but not leaving out other biological characteristics and uses.

114.18

Discharge of this effluent should not be allowed unless it meets state and federal water quality standards prior to reaching the end of the pipe. The addition of significant amounts of toxins to Lynn Canal can be easily avoided through treatment of this effluent.

Given present scientific knowledge of human caused damage to the world environment and the increasing rate of this damage (with its resulting increase in the rate of planetary environmental degradation), it is important for us, with EPA and DEC our agents, to reduce the amount of pollutants entering the environment. To do this we must eliminate all unnecessary new sources of pollutants. With proper use of available water treatment technology we can remove the pollutants from this effluent stream. To do less would be extremely shortsighted.

As a result of the workshop I had several ideas for NPDES permits including this one. EPA should study Alaskan species for inclusion in the Gold Book standards. Monitoring turnaround time should be kept to an absolute minimum so that corrective (and punitive) action can be taken immediately. Permit violators should automatically receive fines. In the permit EPA should commit to having enough staff to do the job required by the permit.

114.19

I would like to know how public comment affects the permit and, specifically, whether my comments have made any change in the permit. I would also like to know whether EPA is required to specifically address specific comments, and how this is done. I would appreciate hearing from EPA on this.

114.20

During the public hearing, Dick Myren of Juneau commented that seawater flocculates sediments. If this is the case, won't the toxins concentrate and persist in the area around the outfall? What effect will this have on the permit?

114.16

Please see response no. 114.2.

114.17

Please see response no. 93.65.

114.18

Comment noted.

114.19

The Forest Service has forwarded your letter to the EPA for response.

114.20

Saltwater will not flocculate the particulate solids that could carryover in the tailings pond effluent, as normally defined. It is possible, however, that the seawater changes in density, temperature, organic concentration, and ionic charge may cause discrete solids and fines that carry over in the tailings pond effluent to agglomerate and settle out of solution more rapidly in or around the area of the diffuser outlet.

Any actual "toxicity" of this material would have to be established; however, based upon the current water balance and recent sedimentation studies, given the Applicant's proposal, the total average daily suspended solids would be estimated in the range of 500 to 1,000 lbs. per day. Some of this material would be expected to be carried by the current and/or the velocity of the plume over a larger area, and some fraction would settle out on the bottom and become integrated with the bottom sediments. The movement and travel of the suspended solids will depend upon the condition prevalent in the Lynn Canal (i.e., the higher the velocity of the current the greater the dispersal of solids) and the characteristics of the material.

Thank you very much for this opportunity to comment.

Sincerely,

Aaron Brakel



Hyak Mining Company, Inc.
1114 Glacier Avenue
Juneau, Alaska 99801

September 2, 1991

115

Kenneth Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

Ref: Review Comments -Kensington Gold Project DEIS

Gentlemen:

As the immediate adjacent landowner, actions at the Kensington must affect the Jualin Project. We are obviously an interested party and wish to comment on the DEIS for this proposed project.

However, we are mystified by the process that we are to comment upon. We read in the JUNEAU EMPIRE of August 26, 1991, where Frank Bergstrom of Echo Bay states regarding the Kensington:

"We don't have a mine yet. You've got to have reserves that justify the level of expenditure for a mine and we just don't have those reserves. We need to do some more exploration."

Apparently, the Kensington is in exactly the same stage as the Jualin project, having significant reserves with a continuing large exploration program to find more.

We have worked hard to determine how cumulative impacts could be minimized, yet we note on page 2-25 of the DEIS, that "The Jualin property development status is currently too speculative to evaluate joint facilities alternative in detail in the Kensington Gold Project EIS."

Since the Kensington schedule will not be impacted, this appears to be an excellent time to perform a detailed review of the use of joint facilities to reduce cumulative impact.

115.1

The Kensington Project has submitted an application for a plan of operations that describes development of a producing mine. Jualin has not submitted an application. There is a fundamental difference in these positions as far as Forest Service responsibility to respond.

The thrust of our proposal is accessing both the Jualin and Kensington sites by a shuttle ferry across Berners Bay and up the existing Johnson Creek Road. This eliminates three major environmental problems inherent in the Comet Port alternative:

1. This plan eliminates the use of a port at Comet, which is described by Echo Bay's own consultant as less than reliable. The use of the Comet requires huge quantities of process chemicals and fuel to be barged through, and off loaded nearly on top of the Point Sherman fishery.
2. It eliminates use of helicopter access. Both safety and environmental aspects show this is an improvement to the proposed project. The reason the Johnson Creek road was constructed in 1988 was to reduce helicopter travel.
3. It eliminates the construction of large camps for the mines. This will reduce impact to the area's resources, and is the same approach as was used for the Greens Creek Mine near the sensitive wilderness area on Admiralty Island.

Certainly, there is opposition by a few radical preservationists to the use of Berners Bay by a shuttle ferry. Preservationists are by definition selfish, their consistent refrain is: "I don't want my private (public) area disturbed." Preservationists should not be mistaken for environmentalists. However, if the proposals are viewed factually without emotional rhetoric, there is no question the shuttle ferry concept greatly reduces environmental impact for the Kensington Project, and totally eliminates any cumulative impact regarding transportation for the operation of the Jualin.

We are sorry to see excuses are given in the DEIS, instead of a thorough and rational analysis of joint facilities to reduce potential cumulative impact for multiple-developments in the Berners Bay Mining District, such as in the DEIS on page 2-25:

"The Kensington Venture cannot assume the risk that the Jualin developers ... would share similar management goals and strategies, as well as production schedules.

If the oil companies that developed Prudhoe Bay had taken this attitude, there would be eight Trans-Alaska pipelines.

Or the excuse:

"While it is not possible to predict that a takings under the Fifth Amendment of the United States Constitution would be the result of joint facilities, one could result if project owners are forced into uneconomic commercial arrangements. Therefore,

115.2

The FEIS recognizes that if the Jualin proposal is developed, there is the possibility that a tunnel could be developed through the mountain to provide alternate access to the Kensington Project. (See Chapter 2, FEIS, Slate Cove Common Facilities)

115.3

Comments noted.

the issue of takings must also be considered under any government imposed joint facilities proposal."

If this were actually the case, any alternative the Forest Service may select, joint or not, would be subject to this test. NEPA law clear, cost of an alternative is not the deciding factor.

But even prior to enactment of environmental law, specific Federal case law on joint use of mining facilities uses the test of "public welfare." In ALASKA GOLD REC. CO. v. NORTHERN M. & T., 7 ALASKA REPORTS, PAGE 401, referring to numerous court cases prior to 1926:

"Thus we find that the term 'public use' has received enlarged scope and meaning; that test is no longer confined to use by the public, but for the use of the 'public welfare.' The power of a state to work out from the conditions existing in a mining region the largest welfare of its inhabitants has often been recognized." *BACON v. WALKER*, 204 US 316, 27 S. Ct. 289, 51 L. Ed. 499.

The transportation alternative we propose, with minor modifications, was the subject of an engineering study commissioned by Echo Bay. The results of this study clearly showed shuttle ferry service across Berners Bay to be substantially less expensive than the (and more reliable) than the Comet Port proposal. So the point regarding cost and takings is moot in any regards.

The DEIS states that joint facilities would require a "complex" business arrangement. Alaska Statute law, under ASS 09.55.240 (5) grants mining companies the power of eminent domain for among other things the right of access. The Kensington Venture cannot be held hostage, as they could condemn for access through the Jualin property up Johnson Creek, hardly a complex business arrangement.

There is certainly a competitive advantage for a company to be the first to have an approved plan in an area. We believe if the current Kensington DEIS becomes an approved plan, when we or our lessors legitimately attempt to gain approval for the Jualin Project, it may force us into a business arrangement greatly to our disadvantage to reduce cumulative effects. We ask simply for a level playing field. Are we to be punished because we were not the first to cry wolf? The Forest Service should preform a reasonable review of joint facilities to reduce potential cumulative impact to the Berners Bay Mining District.

Sincerely,


E. Neil Mackinnon, President
Hyak Mining Company, Inc.

Transportation for Mineral Development
in the Berners Bay Mining District

By Hyak Mining Company, Inc.
September, 1991

While no company has announced economic reserves for commercial production in the Berners Bay District, it appears likely two or more deposits will see production in the coming years, the Kensington and the Jualin.

Developers of the Kensington Project have proposed a port on Lynn Canal at Comet to supply the Kensington. Hyak has identified major problems with this approach, and have proposed a transportation alternative utilizing a shuttle ferry across Berners Bay.

The ferry would connect to a port at Slate Cove and use the existing road to the area of the Jualin exploration camp. To access the Kensington, a five or six thousand foot tunnel would be driven through the divide to an area just above the proposed Kensington Mill.

Slate Cove was the historic access to the mines along Johnson Creek. A dock existed in Slate Cove for over forty years from the 1890's to the 1930's. Since 1988 this location has been used for a small loading ramp for the Jualin project.

Reference the report by Peratrovitch/Nottingham & Drage (PN&D), Transportation Alternatives for the Kensington Mine, a port facility at Slate Cove is less expensive, more reliable, eliminates the need for the use of helicopters and the need for a camp at the Kensington Mine. It would serve as the only transportation link required for the entire Berners Bay Mining District.

Quoting from the PN&D report (again commissioned by Echo Bay):

Comet Beach

"This location is exposed to the severe wave climate in Lynn Canal. While Point Sherman offers a degree of protection from the Southeast, northerly storms are unimpeded. An analysis of wave data collected by the US Coast Guard at Eldred Rock, six miles north of the site, indicates significant wave heights in Lynn Canal in excess of 20 feet from the north and 15 feet from

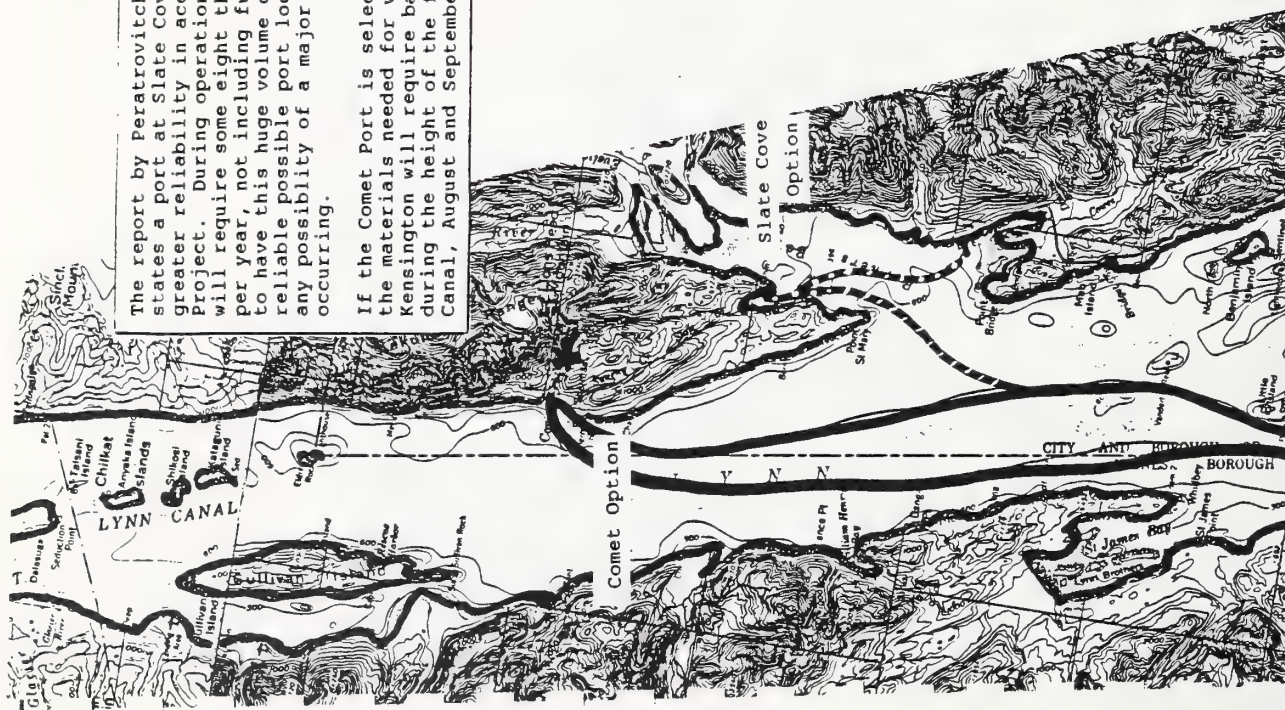
115.4

Thank you for the information.

The report by Peratrovitch/Nottingham & Drage states a port at Slate Cove would have much greater reliability in accessing the Kensington Project. During operation, the Kensington Mine will require some eight thousand tons of chemicals per year, not including fuel. It is critical to have this huge volume off-loaded at the most reliable possible port location, to eliminate any possibility of a major chemical or fuel spill occurring.

If the Comet Port is selected, timing for supplying the materials needed for winter operations at Kensington will require barge traffic transport during the height of the fishing season in Lynn Canal, August and September.

115.4



the southeast. Wave heights at Comet Beach in excess of 14 feet are therefore likely under design storm conditions. The beach is obviously a high energy environment as evidenced by the makeup of the beach; large cobbles and boulders and wave deposited debris located above high tide line in the woods."

What does this report say about Slate Cove:

"Slate Creek Cove is protected from the wave climate in Lynn Canal. The location is totally protected from the north but is exposed to a 5 mile fetch across Berners Bay from the southeast. The significant wave height estimated in Slate Creek Cove is 5 feet for a 25 year storm.

....The reliability of this alternative for passenger transport would be high. Although no measured data is available in this area, preliminary assessments of the wave environment indicate it would never be severe enough to disrupt shuttle service across Berners Bay.

A. Feasibility/Cost

The report by Peratrovitch/Nottingham & Drage states a port at Slate Cove would have much greater reliability in accessing the Kensington Project. During operation, the Kensington Mine will require some eight thousand tons of chemicals per year, not including fuel. It is critical to have this huge volume off-loaded at the most reliable possible port location, to eliminate any possibility of a major chemical or fuel spill occurring.

If the Comet Port is selected, timing for supplying the materials needed for winter operations at Kensington will require barge traffic transport during the height of the fishing season in Lynn Canal, August and September.

Besides materials and fuel, personnel must be transported to the mine. Echo Bay has proposed the use of helicopters to move workers to the mine. This is certainly feasible, but it is costly compared to a shuttle ferry, and noise will be an environmental factor with the helicopter option.

Echo Bay's helicopter option will still require on-site housing for their mine work force. This increases environmental impact in the mine area, as essentially a new city must be constructed and operated. Reference the above PN&D report, the helicopter option is substantially more costly than a daily commute by shuttle

ferry (the PN&D report gives the additional cost at \$8 million).

Quoting from PN&D report, "Figure 9 summarizes the net present worth of the five alternatives under consideration. On the basis of economic criteria, Alternative 5 (daily shuttle ferry between Echo Cove and Slate Creek Cove) is clearly superior at any discount rate considered.

Echo Bay states that onsite housing is required because their workers would have to travel longer than the Greens Creek Mine workers. The Slate Creek/Johnson Creek option allows the daily commute option without excessive travel time, at least for workers living in the northern area of the Juneau Road system. The PN&D report states the daily commute from Echo Cove would be about two hours round-trip.

Greens Creek requires a 15 mile boat trip, and 14 miles by road to the mine. The boat ride is subject to weather problems as it traverses Stephens Passage. The Slate Lakes/Johnson Creek option would entail a 6 mile boat trip, and 7 miles by road to the Kensington Mine from Slate Creek Cove. The boat trip across Berners Bay would have relatively minor weather conditions.

B. Safety

Helicopter travel is a relatively safe and reliable means of transportation. However, helicopters are affected by weather conditions. While the summer months seldom present problems, winter travel up Lynn Canal will encounter high winds and marginal visibility.

The PN&D report rates the reliability of helicopter travel at low to fair, with approximately twenty days per year that helicopter travel is totally prevented by weather conditions.

A critically injured worker could be left stranded at the minesite, should weather prevent helicopter transport to the Juneau hospital. The Slate Cove ferry option is an all-weather transport link, an injured worker would never be more than a few hours away from a hospital.

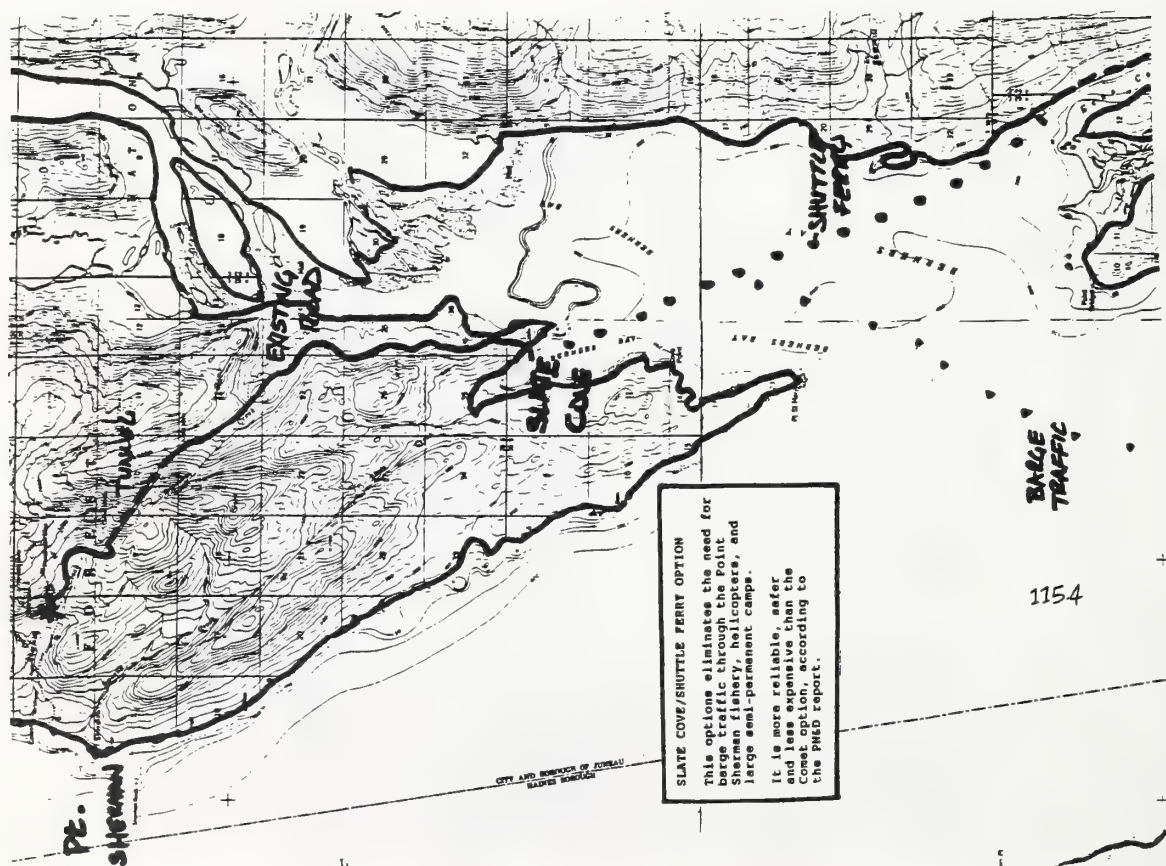
SUMMARY COMPARISON

By Hyak Mining Company, Inc.

Comet Port & Helicopter Facility Vs Berners Bay Shuttle Ferry
& Existing Road, Tunnel

Item	Comet Port	Berners Bay Shuttle Ferry
Reliability of Transportation	Low	High
Camp Required	Yes	No
Facilities Shared	No	Yes
Helicopter Use Required	Yes	No
Affect on Gillnet Fishing	High	Minor
Visibility from Lynn Canal	High	Low
Infrastructure Required for Future Mineral Development	Major	None
*Comparable Cost	\$21.6 Million	\$14.0 Million

*Cost comparisons from the PNsD Report. The cost of a 5,000 foot tunnel required is considered equal to 8.5 miles of road eliminated for purposes of this report.



September 3, 1991

JUNEAU

File No.: 8565

RANGER DISTRICT

116

Kenneth E. Mitchell, District Ranger
 Juneau Ranger District
 8465 Old Dairy Road
 Juneau, Alaska 99801

SUBJECT: Kensington Gold Project DEIS

Dear Mr. Mitchell:

The City and Borough of Juneau (CBJ) has reviewed the Kensington Gold Project Draft Environmental Impact Statement (DEIS). The DEIS and the Final Environmental Impact Statement (FEIS) are to be considered by the Planning Commission as part of the Kensington large mine permit application to the CBJ. Therefore, we are very interested to see that the FEIS is as complete and accurate as possible. We therefore suggest below a number of corrections or additions to the DEIS which will, in our estimation, improve the overall quality of the final product and help insure fully-informed and well-considered decisions.

As you are no doubt aware, the CBJ is reviewing two large mine permit applications simultaneously. The proposed AJ Mine and the proposed Kensington Mine together are, at the very least, "reasonably foreseeable actions" which may have collectively significant impacts to the CBJ. We believe that the brief analysis of the cumulative socioeconomic effects of these projects should be significantly expanded in the FEIS. As part of this expansion, the socioeconomic effects of both population scenarios as presented in Chapter 3 of the DEIS should be carried forward to the cumulative impact analysis. Socioeconomic impacts may be far different if the mines are imposed on a growing rather than a falling economy.

We further encourage the Forest Service to consider the cumulative effects of reopening the Treadwell Mine in addition to the AJ. We realize, of course, that Treadwell is not a proposed action at this time. Nevertheless, the proximity of the Treadwell Mine to the Juneau urban center makes it a likely candidate for inclusion in the Kensington cumulative impact analysis.

We certainly appreciate the fact that it is rarely possible to

DISTRICT RANGER *KEM*
 DEPUTY RANGER
 TLM
 REC
 F&W
 EM
 VIS

116.1

Additional analysis has been done to assess the cumulative effects of developing and operating both the Kensington and AJ mines. High and low baseline scenarios have been considered. Both scenarios project a population increase of about 3,000 persons within the first two to three years of the mine's development. The major difference is whether or not the population level will be sustained; projections for the latter years indicate that either a short-term boom or steady and sustained growth may be realized. Given that the price and production level of oil (independent variables in the population projections) has stabilized, the disparity between high and low scenarios should moderate. A more realistic forecast for planning purposes would approximate this middle ground.

116.2

The Forest Service does not consider the reopening of the Treadwell Mine to be a reasonably foreseeable action as defined under NEPA. We know of no serious proposals that support this hypothesis.

Kenneth E. Mitchell
September 3, 1991
Page 2


have all the answers to all the questions concerning the impacts of a project. However, at this time there is a significant amount of research being undertaken in connection with the proposed AJ mine. Some of this information may well be applicable to the Kensington EIS analysis, particularly with respect to the CBJ. We suggest that the Forest Service carefully review the AJ information which becomes available during your timeframe for responding to DEIS comments. We are available to facilitate an information exchange if this would be helpful.

During the Juneau and the Haines public hearings on the Kensington DEIS, there was a considerable amount of testimony asking for additional wastewater treatment. We believe the FEIS must address this issue. Additionally, due to public concerns raised in the review process, we believe that the DEIS discussion of the empoundment structure should be consolidated and expanded.

As a final general suggestion, we suggest that the discussion of the Forest Service preferred alternative be expanded in the FEIS. During the public hearings, we heard a number of compelling arguments in favor of the applicant's proposal with respect to the location of the generators and the grinding operation. In order to make an informed evaluation of these options, we believe it would be helpful to summarize and display the information which was used to develop the preferred alternative. The trade-offs involved between energy efficiency and noise reduction should be specifically addressed.

Page specific comments are attached to this letter. We hope that the information we are providing herein will assist the Forest Service in developing a Final Environmental Impact Statement which will provide the best possible information and analysis upon which to base subsequent decisions as to whether, or under what conditions, the Kensington mine should be opened.

Sincerely,


Murray R. Walsh, Director
Community Development
(907) 586-5235

116.3

116.3
The Forest Service requested and received the following information from CBJ:

1. New baseline studies.
2. CBJ work on capital and operating costs associated with incremental increases in population.
3. The CBJ development outlook for the next few years and the population projections it is based upon.
4. Proposed requirements to mitigate the adverse effects of an unexpected shutdown of the Kensington mine.

Other sources of new and revised forecasts and analysis pertaining to the Kensington and AJ mine proposals are being pursued.

116.4
The tailings dam and impoundment discussion in the FEIS has been expanded.

116.5
The FEIS, in Chapter 4 contains additional analysis of underground grinding and noise impacts from the generators. The Record of Decision will contain the reasoning behind selection of the preferred alternative.

116.4

116.5

CITY AND BOROUGH OF JUNEAU
REVIEW OF KENSINGTON GOLD PROJECT
DRAFT ENVIRONMENTAL IMPACT STATEMENT

Page 5 - 8, AFFECTED ENVIRONMENT, Socioeconomic, City and Borough of Juneau

The statement, "The 1990 census found 26,696 people...." should read, "The 1990 Federal census..." followed by a statement reading, "The 1990 State of Alaska revenue sharing program population determination for Juneau found 28,881 people in Juneau." This population determination should be used as reference in other parts of the DEIS.

116.6

Page 2 - 8, PROJECT COMPONENTS, Destruction of Cyanide

The Alkaline chlorination process may result in residual chlorine concentrations in the mill waste stream. The DEIS does not address the potential need for dechlorination of the mill waste stream. If the waste stream contains detectable concentrations of chlorine, it is appropriate that dechlorination, perhaps through the use of sulfur dioxide, be required.

116.7

Page 2 - 16, PROJECT COMPONENTS, Fuel Use and Storage

The DEIS indicates that the fuel storage tank area would be bermed and any runoff from the tank area would be collected in lined bermed embankments. Collected water would be checked for oil and treated, if necessary. We believe that this method would be problematic and subject to failure. It will be necessary to have all runoff from the lined bermed areas treated using an oil/water separator.

116.8

Page 2 - 17, PROJECT COMPONENTS, Hazardous Materials Handling and Storage

A detailed contingency plan for spill prevention and response must be prepared and the project should have sufficient materials, equipment and trained personnel on site to properly combat a spill of an appropriately predicabile magnitude. These preparations should be discussed in the appropriate level of detail in the DEIS.

116.9

Page 2 - 29, HOUSING AND TRANSPORTATION, Air Transport

The DEIS states that the applicant withdrew its proposal for an airstrip based on overall reliability, associated safety instrumentation which would be required and the costs of

116.10

116.6

The statement has been rewritten as follows: The 1990 population estimates for Juneau range from 26,696 persons, as reported by the federal census, to 28,881 persons, as determined by the State's revenue sharing program.

116.7

Please see response no. 93.53.

116.8

Comment noted.

116.9

Fuel handling and storage plans are required to conform with EPA regulations (40 CFR Part 112) and ADEC regulations (Alaska Oil Pollution Control Law and the Alaska Oil and Hazardous Substances Releases Law). The DEIS in Appendix A, Part E (Applicants Proposal, Spill Prevention Control Plan) discusses conceptual fuel storage and controls proposed by the Kensington Venture. An SPCC Plan will be developed as required by Section 311 of the Clean Water Act.

116.10

The Kensington Venture, at one time, proposed fixed wing aircraft as the principal means of site access. The fixed wing proposal has been withdrawn in favor of helicopters. Because of the earlier fixed wing proposal, the Forest Service initiated study of the impacts associated with locating an airstrip at the site. It quickly became obvious that an airstrip would greatly magnify the terrestrial impacts of the project. The scoping process did not identify issues resulting in need to study fixed wing transportation. Thus, the information you are requesting was not needed for the NEPA process and has not been gathered by the Forest Service.

CBJ Review/Kensington DEIS
Page 2

maintaining an airstrip. We would like to see additional information presented on the relative safety records of planes vs. helicopters used in this type of service.

Page 2 - 29, HOUSING AND TRANSPORTATION, Daily Commute

The DEIS variously describes the commute by ferry from Auke Bay to Comet Beach as one hour or a two hour trip.

Page 2 - 41, MANAGEMENT, MITIGATION AND MONITORING, Project Administration

The statement, "Following is a typical sequence of events after issuance of the ROD." does not include the role of the City and Borough of Juneau as a permitting agency. The CBJ Mining Ordinance requires the Applicant to submit and negotiate mitigation, monitoring and reclamation agreements. This shall be done prior to the issuance of a CBJ Large Mine Permit. The DEIS should acknowledge the role of CBJ in this area.

Page 2 - 43, MITIGATION AND MONITORING, Socioeconomic Measures

The DEIS lists as a mitigation measure encouraging employees to locate in designated growth/service areas. What is a "designated growth/service area"?

Page 2 - 44, MITIGATION AND MONITORING, Reclamation

Regarding reclamation activities, we suggest that embankment erosion control and maintenance be included.

Page 2 - 46, MITIGATION AND MONITORING, Interim Shutdown Measures

We suggest this is another opportunity to coordinate with the provisions of the CBJ Mining Ordinance. This ordinance requires that operators must notify the CBJ not less than 60 days prior to requesting placement on inactive status.

Page 2 - 47, MITIGATION AND MONITORING, Employee Camp

The helicopter flight path should be examined to avoid noise impacts to CBJ residents as well as the mountain goats and eagles.

116.11

The commute would be expected to take slightly more than two hours under ideal conditions. Under severe weather conditions it would take longer. This has been clarified in the FEIS.

116.12

The discussion you refer to describes Forest Service procedures only. Many other agencies, the CBJ included, will require additional documentation in order to issue permits under their jurisdiction. Chapter 1 of the FEIS describes the permitting roles of other agencies.

116.13

This statement has been removed from the FEIS. Unless the company is willing to provide special housing, subsidize construction, or provide incentives for employees to locate in other communities, the availability of housing will dictate where employees will reside.

116.14

Comment noted. Chapter 2 of the FEIS has been revised to include these points.

116.15

The Forest Service appreciates CBJ's cooperation during the environmental analysis phase and looks forward to continued cooperation during permitting and project construction and operation.

116.16

The FEIS includes additional discussion of helicopter noise vis-a-vis route and populated areas.

116.11

116.12

116.13

116.14

116.15

116.16

Page 2 - 48, IDENTIFICATION OF THE PREFERRED ALTERNATIVE

The USES suggests several features which differ from the applicant's proposal. At the public hearings we heard cogent arguments presented in favor of the applicants proposal for aboveground grinding and the location of the generators. We encourage the Forest Service to revisit these issues, and display the comparative data.

116.17

The Forest Service has recommended changes to the applicant's proposal largely to address noise concerns. We would note that in a recent Planning Commission trip to several operating mine sites, it was learned that processing noise in modern plants is largely confined to the immediate area. The most intrusive noise source was identified as the OSHA-required backup beepers.

Page 2 - 49, COMPARISON OF ALTERNATIVES, Table 2-4

We suggest that information about the embankment dimensions and the length of stream diversions be added to this table.

116.18

Page 2 - 50, COMPARISON OF ALTERNATIVES, Table 2 - 5

The table states that the socioeconomic impacts of alternative "C" are the same as for alternative "B". We believe that the impacts of "C" could be very different than that of "B". Alternative "C" with its daily commute would encourage most if not all of the mine workers to reside in Juneau, whereas longer shifts might encourage a more dispersed workforce. The residence of miners has many important ramifications including revenues to the CBJ from residential property tax and sales tax. These factors should be noted in the FEIS.

116.19

Page 2 - 50, COMPARISON OF ALTERNATIVES, Table 2-5

The subject of the mixing zone should be incorporated into the comparison of impacts to fisheries and water quality.

116.20

Page 3 - 53, CULTURAL RESOURCES, Known Cultural Resources in the Project Area, Historic Sites

The DEIS states, "Through proposed project and Forest Service examination, much historic material, mostly now in states of disrepair, has been recorded." The documented historic material should be evaluated as to its significance and possibly transferred to an appropriate artifact repository such as the

116.21

116.17

Comment noted.

116.18

The FEIS incorporates your suggestions.

116.19

The table entry for Alternative C has been changed to read: "Restricts mine employees to Juneau residence."

116.20

The conclusion of the EIS is that the mixing zone will have no measurable effect on fisheries, therefore there are no impacts to compare.

116.21

All known cultural resources on the site have been evaluated for significance and none are deemed eligible for listing under the National Register of Historic Places. Any additional resources that might be discovered would be similarly evaluated. Disposition of significant resources would be under a plan developed by the Forest Service and reviewed by the State Historic Preservation Officer and the Advisory Council on Historic Preservation. This process allows for input by interested parties. Documentation and recovery of artifacts for storage at the Juneau/Douglas museum, along with other options, would be evaluated at that time.

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Juneau-Douglas City Museum.

Page 3 - 57, SOCIOECONOMIC ENVIRONMENT, Population

Juneau's population - 28,881

Page 3 - 66, SOCIOECONOMIC ENVIRONMENT, Water Supply

The system demand figures are out of date. In 1990, the average demand was 4.1 MGD. The maximum demand recorded that year was in February - 8.8 MGD. We suggest contacting the CBJ Water Division, (789-6888).

Page 3 - 66, SOLID WASTE, Ownership of Landfill

The landfill/incinerator facility is owned by Channel Landfill, Inc. (not Channel Corporation). An affiliate company, Channel Sanitation Corporation, provides the waste collection service. Channel Equipment Rental Incorporated, also an affiliate company, rents heavy equipment. Collectively, the companies are known as Channel Corporations.

Page 3 - 66, SOLID WASTE, Capacity

During the summer months the amount of waste collected frequently exceeds the capacity of the incinerators. Excess waste is landfilled.

Page 3 - 66, SOLID WASTE, Third Incinerator

The information presented in the DEIS implies that Channel Landfill, Inc. is actively investigating financing options for a third incinerator. This information is dated. Although Channel remains interested in installing a third incinerator, it is our understanding that no new financing options are being examined and those options previously examined have not yet yielded satisfactory results. We recommend that Jerry Wilson, President of Channel Corporations, (780-4288) be contacted for the most current information.

Page 3 - 66, SOLID WASTE, Recycling/Scrap Dealers

A more extensive discussion of the current recycling programs is warranted. A community recycling directory is attached.

116.22 We recognize the difference of opinion and have provided projections using both estimates.

116.23 The FEIS reflects the updated information.

116.24 Comment noted and corrections are incorporated in the FEIS.

116.25 Thank you for the clarifying information.

116.26 The Channel Corporation has been contacted and the status of funding for the third incinerator has been clarified in the FEIS.

116.27 Thank you for the information.

Page 3 - 66, SOLID WASTE, Waste Oil

Again, the information presented in the report appears to be outdated. We recommend the Ernie Polley of Chatham Materials and Services (CMS) (586-1437) be contacted for current information on waste oil collection. CMS is the local company currently operating waste oil collection services in Juneau. According to Mr. Polley, annual waste oil collection in Juneau (not including the cruise ships) amounts to approximately 7-10,000 gallons. Historically, local asphalt batch plants have burned up to 40,000 gallons of the waste oil annually. At this time, the amount of waste oil collected exceeds consumption by locals and users.

116.28

Page 3 - 66, SOLID WASTE, Solid Waste Management Plan

The DEIS should provide an overview of the City and Borough's solid waste management planning efforts.

116.29

Solid waste management planning in Juneau is in a state of flux. The Channel Landfill is up for sale. The City and Borough is currently examining whether it should purchase the landfill. That issue is the focus of phase I of the City and Borough's solid waste management planning process, currently underway. A draft report, prepared by R.W. Beck, is available for review by the preparers of the DEIS.

116.28

We contacted Mr. Polley per your suggestion. His updated information is included in the FEIS.

116.29

Comment noted.

Page 4 - 7, Environmental Consequences

We are not sure where this comment "belongs," but it is important to state that this project, while within the City and Borough of Juneau, is in an area that is not protected with fire protection.

116.30

We have forwarded your comment to the Kensington Venture.

116.31

The project must still comply with the Uniform Building Code and the Uniform Fire Code and will be inspected by the CBJ Fire Inspector. Additionally Emergency Medical Services are areawide and Firefighter/Medic 1 personnel will respond.

Regarding hazardous material response, there needs to be a clear understanding at this time that the City and Borough of Juneau is not prepared above the Hazardous Material First Responder level should an event occur. Kensington Gold Project needs to be prepared to handle releases and spills without the assistance of the CBJ Fire Department.

116.30

The term hoteling refers to an engine operating mode based on the percentage of maximum power and is defined as 10 to 11 percent of available power (EPA, 1985). The hoteling mode is typically used while ships are docked for a short period of time, and minimal power is needed to run lights, communications, and ventilation equipment. During these times the ship serves as a hotel for passengers and crew, hence the term. See also EPA (1985c).

Page 4 - 1, AIR QUALITY, Effects Common to All Alternatives

The DEIS refers to "hoteling" modes. Please explain.

116.31

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Page 4 - 13, SURFACE WATER HYDROLOGY, Sedimentation

Depending on the weather, desiccating winds will dry the exposed tailings and blow clouds of dust over the countryside, or heavy rain will scour the flats, resuspending the fine tailings and adding to the sediment load of the pond discharge. Wind-driven currents and wave action in shallow pond water would do the same.

Surface runoff from the project site can be a significant source of suspended sediment. Disturbance of the vegetated surface in Southeast Alaska can result in significant sediment load to receiving waters, especially during periods of high rainfall. The DEIS does discuss runoff management in general, particularly in the construction phase. It is important that all site runoff be collected and treated before discharge. Simple settling ponds may not be sufficient to meet effluent limitations for suspended sediment. It may be necessary to add chemical flocculants to aid settling. A detailed site runoff water control plan should be prepared and approved before project construction begins. The plan would provide, at the appropriate level of detail, for the collection, treatment and disposal of all runoff water from the project site.

116.32

A-324

Page 4 - 14, SURFACE WATER HYDROLOGY, Sewage Disposal

The DEIS indicates, "The domestic waste stream from the facility would be expected to have similar characteristics to standard high strength domestic wastes. Experience on the Arctic Slope and the Alyeska pipeline indicates that this waste may have biochemical oxygen demand and suspended solids concentrations an order of magnitude greater than municipal sewage. Waste of this strength may be very difficult to treat in a typical package treatment plant. In addition, the nutrient loading of the tailings pond from the discharge of treated domestic wastewater may result in increased growth of algae, complicating the chemical dynamics of the tailings pond."

116.33

Page 4 - 14, SURFACE WATER HYDROLOGY, Pond Effluent Characteristics

The DEIS notes the possibility of additional treatment to reduce cyanide levels in the pond if necessary to meet NPDES requirements. The subject of additional treatment was heard repeatedly at the Hearings. We urge the Forest Service to discuss in greater detail this possibility - what would this entail in terms of cost, facilities, chemicals, etc.

116.34

116.32

A surface water drainage control plan will be incorporated as part of the Plan of Operations by the Kensington Venture to be submitted to the Forest Service for review and approval prior to project construction. This plan will be reviewed each year to reflect areal disturbances associated with the project.

Rainfall in the area exceeds 80 inches annually, which limits the dust potential. The expected level of compaction over the tailings beach will also allow the use of water sprays, if necessary.

Recently adopted EPA Stormwater Permit Regulations will also apply to the project. A storm water pollution plan will be required and must address:

- 1) persons responsible for implementing the plan;
- 2) inventory of materials handled at the facility and an assessment of their potential to contribute pollutants to stormwater;
- 3) a preventive maintenance program;
- 4) spill prevention and response procedures;
- 5) storm water management measures;
- 6) sediment and erosion prevention plans; and
- 7) employee training and facilities inspection plans.

116.33

The waste strength of the domestic wastewater would be expected to be of nominally high strength in terms of BOD and suspended solids. Since the system will be new and construction is anticipated to be of a high quality, dilution by inflow and infiltration, characteristic of older wastewater system, will not occur. However, the wastewater would not have commercial or industrial components, which, for many municipal wastewater systems, contribute significantly to the total loading to the treatment plant. The design of the domestic facilities will be completed by an engineer familiar with the problems associated with isolated facility or construction camp type situations, sized for the maximum expected loading and submitted to the Forest Service and ADEC for approval prior to construction.

As presently proposed, treated domestic wastewater would bypass the tailings pond and be introduced directly into the discharge outfall line.

116.34

Please see response no. 93.13.

Page 4 - 14, SURFACE WATER HYDROLOGY, Effluent Characteristics

Reduction of cyanide concentrations beyond that achieved in the alkaline chlorination process is dependent upon dilution with other wastewater streams and exposure to oxygen and sunlight in the tailings pond. This degradation is sensitive to the concentrations of dissolved oxygen in the tailings pond, if the pond contains a high concentration of organic matter, dissolved oxygen may be low, resulting in a slowed rate of cyanide reduction. As cyanide is a major reagent used in the gold beneficiation process, it is of particular importance to maintaining water quality.

Although the mill wastewater stream will be treated to remove cyanide, reduction of other pollutant concentrations, particularly trace metals, is dependent upon dilution and natural processes. The DEIS forecasts that trace metals will form insoluble compounds which will precipitate out in the tailings pond sediments. How effective these natural processes are will not be known until sometime after the project begins. It may be necessary to provide supplemental treatment of the mill waste stream if unacceptably high concentrations of pollutants remain.

Page 4 - 18, SURFACE WATER HYDROLOGY, Site Development

It is not clear how the Ophir Creek and Sherman Creek diversion ditches will handle: 1) stream sediment from either the main streams or hillside flows and; 2) heavy winter snowfalls and side channel glaciation.

Page 4 - 18, SURFACE WATER HYDROLOGY, Tailings Disposal ("B")

It appears that all the surface water runoff from the Ophir Creek side of the project will be intercepted by a ditch and routed past the tailings pond. The surface flow in Sherman Creek will be captured at a point above the mill site and put in a pipe which will carry it past the tailings pond on the south side.

This leaves about one square mile of uncontrolled drainage area that will send runoff directly into the tailings pond. during storms, the amount of runoff water reaching the pond from this uncontrolled drainage area could overwhelm the pond effluent discharge pipeline. At the very least such an event would resuspend large volumes of fine tailings that had settled in the pond. A heavy sediment concentration in the pond effluent would result.

116.35

Please see responses no. 86.4 and 93.13.

116.36

Both diversions include a quiescent area for deposition and solids settling. These areas would be accessible, allowing for maintenance and solids removal. Heavy winter snowfalls are not expected to affect the integrity of the diversion.

116.37

The total undiverted catchment area, including the tailings impoundment, is 360 acres or 0.56 square miles. The impoundment area where tailings would be stored is approximately 175 acres. Therefore, of the catchment area providing undiverted runoff to the impoundment, approximately 185 acres or 0.29 square miles would be associated with upland watershed drainage. This runoff entering the pond would be generated from a watershed with predominantly undisturbed vegetation cover thereby generating minimal suspended sediments. The runoff would be routed to the impoundment area through controlled drainage conveyance systems minimizing both sediment contribution to the impoundment and resuspension of fine tailings.

Surface run-off above the Sherman Creek diversion pipe would be collected at 500 foot intervals along the length of the diversion. The collection inlets are provided adjacent to the new access road and collect run-off from a shoulder ditch parallel to the access road. As such, there would be minimal increase in surface run-off to the impoundment area from this portion of the watershed.

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Page 4 - 22, GROUND WATER HYDROLOGY, Mine Water

Mine drainage water is another potential source of pollutants. Both the DEIS and the draft NPOES permit Fact Sheet indicate that mine drainage water (estimated at 700,000 gpd in the DEIS and 1,440,000 gpd in the NPDES permit) would be routed to a "sediment pond". The mine drainage water would then be used in the mill (referred to as "recycling" in both documents) and/or treated and discharged through the marine outfall. There is no detail provided on the treatment process proposed for mine drainage in either document, other than the sediment pond, where presumably mechanical settling will take place. If, indeed, other treatment may be used for the mine drainage water it is important that it be described in detail.

116.38

Page 4 - 26, AQUATIC RESOURCES-MARINE, Marine Discharges

The performance of the mixing zone is going to depend on the rate at which fresh water tailings pond effluent is introduced into the zone. Unless some provision is made for impounding storm water of snow melt and releasing the impoundment at a steady rate, the effluent discharge rate in the mixing zone would vary by an order of magnitude. This is a normal occurrence in natural drainage areas in Southeast; and it should be expected to occur in the discharge from the Kensington tailings pond, given the one square-mile unregulated drainage area feeding it. Even with some throttling due to constrictions in the pond effluent pipeline system, large flood flows, especially flood flows of high turbidity, could overwhelm the mixing zone.

116.39

The approach used in establishing the design criteria for the proposed mixing zone appears reasonably conservative. However neither the DEIS nor the draft NPDES permit and its Fact Sheet describe in detail the physical dimensions and location of the mixing zone. At the point a final permit decision is made, the mixing zone must be specified.

The exact dimensions of the mixing zone are important to deciding whether a mixing zone is appropriate. The boundaries of the mixing zone may intrude into sensitive areas, areas where other uses are of importance, or to the photic zone. It is difficult to comment on the impact of removing the volume of the mixing zone from purview of the Water Quality Standards without more detail.

116.40

Page 4 - 30, AQUATIC RESOURCES, Impacts of Heavy Metals

Please explain "in the pipe" standards. Is this the same as

116.38

Mine drainage water quality has been monitored during the past 3 years and the quality is well known. Mine water would be piped to a large sediment pond which overflows to the tailings impoundment area. There it would mix with process water settled out from the plant tailings and returned (recycled) to the plant, as required. If flocculants are required in order to meet effluent limitations or water quality standards, they would be used as required. The discussion of water treatment in Chapter 4 of the FEIS includes mine water in the water balance.

116.39

The available freeboard in the tailings pond ranges from 30 to 12 feet, depending on the operating year.

Both deep water and shallow water diffuser locations are displayed in FEIS Chapter 4.

116.40

In-the-pipe (or end of pipe) standards are not the same as pre-mixing. In-the-pipe standards refers to the maximum allowed concentrations of substances that can be discharged from an outfall pipe.

Pre-mixing refers to a process whereby water from the receiving water body, in this case Lynn Canal, would be pumped to some sort of a shore-based facility (or at least to within the outfall pipeline itself) where the effluent and marine waters would be mixed prior to discharge to the receiving water body. This would remove the need for a mixing zone in the receiving waters.

"pre-mixing" as has been suggested by some as possible alternative to the mixing zone? Is pre-mixing a viable alternative?

Page 4 - 57, CULTURAL RESOURCES, Summary

The DEIS states, "It is unlikely that any adverse effects would occur to cultural resources." Section 106 of the Federal Historic Preservation Act requires inventory of cultural resources prior to certain development actions on all Forest Service land. Review by the local Historic District Advisory Committee is required on all lands within the City and Borough of Juneau and mitigation may be required as part of the process. This process is not outlined or addressed in the DEIS.

Page 4 - 58, VISUAL RESOURCES, Effects Common To All Action Alternatives, Marine Terminal

The DEIS should consider the possibility of providing a landscaped visual buffer strip along the waterfront to visually screen the marine terminal structures within the viewshed from Lynn Canal.

Page 4 - 58, VISUAL RESOURCES, Effects Common To All Action Alternatives, Main Facility

The DEIS should consider the visual effects of lighting from the facility as seen from Lynn Canal. The area lighting goals should be to provide adequate lighting for safety yet kept to a minimal to reduce the visual impacts.

Pages 4 - 59, VISUAL RESOURCES, Effects Of Alternative B, C, D

The DEIS should evaluate the placement of topsoil on the impoundment structure and the tailings so that vegetation will grow to help mitigate the visual impacts. Investigation should look at the possibility of providing an undulating top of the impoundment structure which would be more reflective of the natural landforms rather than a straight level landform.

Page 4 - 61, VISUAL RESOURCES, Effects Of Alternative E

The DEIS should evaluate the placement of topsoil on the dewatered tailings impoundments so that vegetation will grow to help mitigate the visual impacts. Investigation should look at

116.41

It is unlikely that adverse effects to significant cultural resources would occur because none are known to exist on the site. The FEIS displays the local Historic Advisory Committee review process (see Chapter 2).

116.42

As part of the mitigation measures in FEIS Chapter 2, all structures near Comet Beach will be screened with natural vegetation to the extent possible.

116.43

As part of the mitigation measures in FEIS Chapter 2, exterior lighting will be directed inward to reduce glare and visual impacts. The FEIS includes additional discussion of the visual effects of the project at night.

116.44

Detailed plant successional studies conducted on various mine, logging, and landslide areas in southeastern Alaska document the fact that existing organic soils are a very poor medium for promoting plant establishment and that the best soil materials are bare mineral soils. Reclamation suitability analysis of the soils in the Kensington area supports this finding. Before final recommendations can be made regarding the need and amounts of topsoil necessary to mitigate visual and vegetation disturbances to the site, detailed site-specific studies must be completed as described in the DEIS (Appendix A, page C2).

An undulation top to the embankment would not be practical as it would affect the ability to predict and control the flow of water out of the spillway of the reclaimed structure. This could, in turn, affect the integrity of the structure. Structural integrity supersedes all other considerations for reclamation. Screening the structure with indigenous vegetation would provide the best opportunity to minimize visual impacts while meeting the need to maintain structural integrity.

116.45

Your comments are appreciated. The FEIS reflects your input.

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the possibility of providing an undulating dewatered tailings impoundment which would be more reflective of the natural landforms rather than a straight level landform.

Page 4 - 63, SOCIOECONOMICS, Population Related Effects

We are pleased to see alternative population scenarios presented in the DEIS, and encourage the Forest Service to keep this feature in the FEIS.

Page 4 - 64, SOCIOECONOMICS, Effects Common to all Alternatives

Again, we believe that the impacts of alternative "C" and the daily work shift could vary considerably from those of "B" and a 14 day on/14 day off schedule.

Page 4 - 64, SOCIOECONOMIC EFFECTS, CBJ

We highly recommend that the DEIS include an evaluation of the effects of the population growth associated with the Kensington project on the recreational resources and services of the CBJ. The DEIS does not address the impacts of population growth on existing recreational facilities and programs provided by the CBJ. As an example of an area of potential impact, existing use of school facilities during non school hours has risen dramatically over the last two years. In FY89 school facilities were used a total of 20,000 hours while in FY91 usage hours increased to over 47,000 hours. Available time for all user groups for existing recreational and school facilities is currently limited if not non-existent.

Page 4 - 66, SOCIOECONOMICS, Housing Effects

As the Forest Service announced at the Juneau hearing, the total number of housing units needed is overestimated in the DEIS, and the correct figure is approximately 465, not 827. We encourage the Forest Service to revisit this section as the figure presented here do not match up with those in the cumulative section.

There will not be a supply of underutilized housing available to accommodate increased mining employment due to the Kensington. The response of the housing market is important to determining the impact of the mine. There are conflicting opinions on the likelihood of the market supplying affordable housing. The DEIS should discuss the relevant arguments and assumptions.

116.46

The alternative scenarios have been retained in the FEIS.

116.47

Comment noted.

116.48

Given that the use of the CBJ recreational resources currently exceeds capacity, the problem needs to be addressed whether or not the mine is developed. Please see response to no. 116.56.

Corrections to the housing estimates have been made for the FEIS. Also, please see response no. 99.54.

We also believe it is important to consider the total number of housing units which will be required in the Juneau area based on the current demand for new housing and the extremely low vacancy rate. Projections compiled by the Engineering Department suggest that as many as 1,292 units will be built through 1996 apart from those required by the mine-related population.

Page 4 - 67, SOCIOECONOMICS, Health and Social Services

We would like to point out that there is currently in Juneau an apparent need for more primary care physicians. Many physician practices are "closed" meaning that they are not accepting new patients. There is also a lack of suitable office space. These two problems exist today and would be compounded by the anticipated increase in population.

Page 4 - 67, SOCIOECONOMICS, Health and Social Services

The FEIS should include an examination of the impacts of population increase on the availability of daycare facilities.

The FEIS should also consider the impacts to the Juneau library system. We do not anticipate impacts here apart from those related to increased use due to additional population. Assuming that mining families and support sector workers use the library in the same proportion as the rest of the population, the new users would result in an increase use of over 5%. Overall library use increased by 21% in recent years with the new downtown facility, straining library operations in a number of areas. Currently about 62% of Juneau residents over 5 years old have library cards current within two years.

Page 4 - 67, SOCIOECONOMICS, Public Facilities

The Mendenhall Treatment Plant is operating at about 50% capacity, not 15% capacity.

Page 4 - 68, SOLID WASTE, Impacts

The analysis of the mine's impact on Juneau's solid waste system should be substantially expanded.

Data should be included which identify both the quantity of anticipated solid waste generated by the mine itself as well by the increased Juneau population (which directly or indirectly results from the mine operation). The mine's waste stream

116.49

The mine-related population increase is tied to a specific project; should the mine be approved, these people will definitely move to Juneau. To the extent the company can alter the scale and timing of development, the impacts of such an influx are both quantifiable and controllable. Individuals considering employment opportunities in Juneau will take it upon themselves to investigate the current housing market and prices and decide accordingly. Therefore, it is assumed that the general population growth and associated housing needs will either be accommodated or dissuaded as in years past.

116.50

Chapter 4 of the FEIS has been revised to reflect your input.

116.51

There are no reliable means to predict what level of demand the induced population changes will place on the library, day care availability and many other social services other than to estimate an increase in use proportional with population change, as you have done. The EIS serves, among other things, to notify responsible local officials of expected changes that could impact services under their jurisdiction.

116.52

Thank you for the clarifying information.

116.53

The mine will generate solid waste at a rate of two to three tons per month. This will consist of used tires, ventilation bags, electric cable, pipe and fittings, cables, rock bolts, wire mesh, timber and equipment parts. Approximately 50 percent of this material will be stored on site for future salvage. The balance of this material (approximately 2,500 lbs. per month) will require disposal in Juneau.

One option the Kensington Venture is currently evaluating involves mixing cement with ash, and disposing of the waste in the tailings pond. The amount of this material is considered minimal, and could also potentially be stored underground in the mine during the latter stages of the project.

It is difficult to predict the amount of solid waste associated with construction. It is a function of shipping and packing containers for the approximately 17,000 tons of freight needed to construct the project.

The underground mine will use approximately 27,000 gallons of diesel fuel and approximately 5,400 gallons of greases, lubricants and oils per month. The lubricants, greases and oils will be collected at the project site for disposal at Juneau.

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composition should also be discussed. The type and quantity of non-burnable wastes that will require landfilling should be stated. The amount of ash requiring landfilling should also be identified.

The City and Borough of Juneau Assembly adopted Resolution 1433 in the spring of 1990, committing the city to the goals of integrated waste management. The mine should develop and implement a source waste reduction and internal recycling program in order to mitigate its impacts on Juneau's solid waste stream. A description of those programs should be included in the FEIS.

Page 4 - 69, SOCIOECONOMICS, CBJ Revenues and Expenditures

We note that the Forest Service has received some criticism for using constant costs in the expenditure projections. There is enough uncertainty in predicting per capita costs of municipal government that we support the DEIS' use of constant per capita costs in real dollars. As part of the CBJ socioeconomic impact assessment for the Kensington project, we intend to review the data to see how expenditures have measured against available revenue.

116.54

Comment noted.

116.55

Please see response no. 116.1

116.56

Please see response no. 116.51.

Page 4 - 70, CUMULATIVE EFFECTS, Table 4 - 24

Since the population projection used in the DEIS is no more likely than the CBJ (BERGER/ABAM) projection, the cumulative analysis of the FEIS should include both population scenarios. Effects are largely driven by population, so it is important to show the range of numbers and resulting effects.

Page 4 - 70, CUMULATIVE EFFECTS, CBJ

Again, the FEIS should include an analysis of the impacts of cumulative population growth on recreational resources and services of the CBJ. If both mines are in operation, with a potential of a 10% growth in population, existing facilities and programs will be impacted. As an example, the national standard for the number of baseball/softball fields in a community is 1 per 1,500 residents. Currently, Juneau has 13 baseball/softball fields or 1 per 2,100 residents. An increase in population of 3,000 creates a need for two additional fields on top of our existing shortfall.

Page 4 - 71, CUMULATIVE EFFECTS, Health and Social Services

The CBJ concurs that Bartlett Memorial Hospital should be able to accommodate the health care service requirements of the increased population. The only adjustments that would potentially need to be made would be in the numbers of staff needed or in the hours of operation for certain hospital departments.

116.57

116.57
Comment noted.

Page 4 - 71, CUMULATIVE EFFECTS, Public Utilities

The subject of municipal water supplies needs more attention. The two mines will increase demand while the AJ may decrease supply. This section of the EIS should incorporate information forthcoming about the Last Chance Basin aquifer, and the impacts of the AJ reducing Gold Creek flows by an estimated 20%.

116.58

116.58
Please see response no. 116.51 regarding the demand on City services. Any reduction in supply caused by the AJ project should be addressed in the AJ environmental analysis.

Page 4 - 71, CUMULATIVE EFFECTS, Public Utilities

The ability of the wastewater treatment plants to handle additional population is largely dependent on where the new population resides. A recent study completed by the CBJ showed there are some areas of the East Valley collection system that are currently over capacity. Adding new housing units which would be served by the East Valley system would cause several sections of the system to experience surcharging. The CBJ does not have an estimate at what point these capacity problems will become serious enough to require major improvements.

116.59

116.59
Comment noted.

116.60

While there may be a few consultants or other workers who occasionally park at the airport, the impact on airport parking would be minimal.

Page 4 - 74, TRANSPORTATION, Effects Of Alternate B, Employee Transport

The DEIS discussion assumes all users will be dropped off at the airport, however it would seem that if daily flights are made that some workers and/or consultants may not adhere to the week on/week off schedule and might have some impacts to the parking capacity at the airport. The DEIS should address this by categorizing the various personnel and the expectancy of their trips to the mine site.

116.60

Page 4 - 80, NOISE, Alternate B, Impacts of Additional Traffic

Additional assessment should be performed on the noise impacts to recreational and residential facilities and uses along the helicopter routes from the airport to the mine. This should include the proposed route as well as the alternative routes to be used during emergency and weather diversions.

116.61

116.61
Please see response no. 114.10.

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Page A - 7, SURFACE FACILITIES, Explosives Storage

In addition to 27CFR181 J, explosives aboveground must meet the Uniform Fire Code.

Page B - 6, ENVIRONMENTAL MANAGEMENT MEASURES, Hazardous Chemical & Substances

A hazard vulnerability analysis should be required with plume models showing worse case scenario as well as most probable spill or leak. This would illustrate community vulnerability should an incident occur.

Pages B - 8 & 9, ENVIRONMENTAL MANAGEMENT, Explosives

Explosives will also be regulated by the Uniform Fire Code as adopted by the Municipality.

Pages B - 8 & 9, ENVIRONMENTAL MANAGEMENT, Fire & Safety

The Kensington Gold Project is located in an unprotected area, which means the Fire Department will not provide firefighting services. However, its facilities are subject to plan review and inspection by the CBJ Fire Inspector, using the Uniform Building Code and the Uniform Fire Code.

Page E - 1, SPILL PREVENTION CONTROL PLAN, Applicable Regulations

The jurisdictional responsibilities of the City and Borough including enforcement of the Uniform Fire Code should be added to the additional agencies with transporting, handling, storage, etc.

Page E - 2, FUEL & OIL TRANSPORT STORAGE

In addition to the diking required around the fuel tanks, provisions for a water/oil separator will also be required.

Page E - 3, SPILL RESPONSE PROCEDURES

The cache of spill supplies should include enough to surround the largest barge unloading product.

116.62

Please see response no. 99.22.

116.62

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Page F - 1, HAZARDOUS MATERIAL PLAN, Purpose

The primary objectives should be for life and safety, not only for workers but also for the community as well. The emergency response program needs to make provisions for decontamination of the injured, the Firefighter/Medic I personnel who may respond, as well as the aircraft and the hospital.

Page F - 5, HAZARDOUS MATERIAL PLAN, Response Procedures

Provisions need to be included for the care of possible sick and injured and, as mentioned before, the impact on the community from possible contamination.

Page F - 6, HAZARDOUS MATERIAL PLAN, Other Hazardous Material Handling Aspects

In the event of a release, the draft calls for notification of the community emergency manager, and any likely area to be effected. The question is who and how will the determination be made of "effective area"? This is another reason for plume models of releases at various levels of release that can be overlaid onto a map and adjusted for wind, tide, or other factors.

116.62

STATE OF ALASKA

WALTER J. HICKEL, GOVERNOR

OFFICE OF THE GOVERNOR

OFFICE OF MANAGEMENT AND BUDGET
DIVISION OF GOVERNMENTAL COORDINATION

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RANGER DISTRICT
Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

SUBJECT: Kensington Gold Project Draft Environmental Impact Statement, STATE I.D. NUMBER AK910605-07J

September 3, 1991

The State has reviewed the Draft Environmental Impact statement (EIS) prepared by the United States Forest Service and ACZ, Inc., Consultants, for the Kensington Gold Project proposed by Echo Bay Exploration, Inc. and Coeur-Alaska, Inc. (Kensington Venture). This State position was developed by the Division of Governmental Coordination (DGC) with the Departments of Natural Resources, Environmental Conservation (ADEC), Fish and Game (ADFG), and Commerce and Economic Development.

The Kensington Draft EIS is clearly written and organized. It provides adequate comparisons of the proposed alternatives. The alternatives assessment by the Forest Service and the level of preliminary monitoring on the alternative tailings sites have not biased the document toward either the applicant's proposal or the preferred alternative. The Forest Service approach of combining elements from various alternatives to reach their preferred alternative was clearly presented. The Forest Service and its technical staff have worked with the applicant in conducting and compiling baseline data. The cooperative wildlife studies with ADF&G are also noteworthy.

The State and the Forest Service have discussed levels of information needed for the EIS process and for permits. The State is reserving some more detailed comments on the project for certification of the Environmental Protection Agency and Corps of Engineers permits. We assume that operation details not known at this time will be explained further in the final plan of operation, which acts as the Forest Service permit to operate the Kensington Project. These plans will be reviewed for consistency with the Alaska Coastal Management Program by the State resource

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agencies and DCC. Inclusion of the applicant's proposal in the Draft EIS is very helpful for comparing with the more general information on operations. This gives a better understanding of how EIS decisions will be implemented in the Plan of Operations.

The State supports the Kensington Gold Project if conducted in an environmentally sound manner. The Draft EIS is sound. However, a number of issues should be considered in developing the Final EIS. Our response addresses the format, best management practices, alternatives analysis, cumulative impacts, baseline studies and a number of project specific issues. Detailed comments and recommendations are included in the enclosures to this letter and refer to specific sections in the Draft EIS. Original comments from the participating state agencies are also attached as a reference source.

DRAFT EIS FORMAT

Descriptions and explanations are detailed and understandable but references to studies and data are not always provided in the text to support statements. Additional technical explanation may have been addressed in supporting consultants' reports or other references. Such references would help the reviewer determine if sufficient data has been collected on that issue, if significant data gaps exist, and if the appropriate conclusions have been reached in the Draft EIS. The EIS is a public document, however, and we have indicated where certain technical items should be clarified in the Final EIS. A complete table of contents and an index would be helpful to locate specific sections in the final document.

117.1

A-335

BEST MANAGEMENT PRACTICES

The oversight provided by Forest Service Best Management Practices (BMPs) in terms of land management should be clearly described and distinguished from the BMPs that the Environmental Protection Agency (EPA) will use in overseeing the NPDES permit.

117.2

117.1
Please see the FEIS for a table of contents.

ALTERNATIVES ANALYSIS

The Forest Service preferred alternative generally offers the least environmental impact. The Draft EIS clearly laid out the trade-offs and benefits of the project components so that alternatives can be weighed against one another, such as tailings disposal sites, water diversions, and impacts of various transportation options to the site. Pages 2-48 through 2-55 are particularly helpful in comparing alternatives and highlighting elements chosen for the preferred alternative. One significant factor in planning for Sherman Creek tailings disposal is that considerable development (15 acres) has already occurred at the site.

117.3

117.2

Forest Service BMPs are outlined in USDA Forest Service (1991) and are soil and water conservation requirements. EPA requires that the Kensington Venture develop BMPs for a variety of items including storm water runoff, SPCC Plan compliance, and non-point sources of pollution to surface water (Roberto, 1991) Forest Service and EPA BMPs are often overlapping.

117.3

Comment noted.

117.4	K.E. Mitchell/Kensington DEIS 3	September 3, 1991	Concerns with both Alternative B and the Forest Service preferred alternative include: the need for supplementary water sources during low flow periods; the need for a description of technical details of the slurry application to the tailings beach; impacts to long-term water quality of the rechanneled and dewatered portions of Sherman and Ophir Creeks; the ability of Sherman and Ophir Creeks to support viable biological communities at project's end; and the potential for mitigation of biologic loss due to impacts on Sherman and Ophir Creeks.	117.4 The ADF&G will determine low flow requirements for Sherman Creek and develop restrictions that the Kensington Venture must follow to maintain those flows.
117.5			Furthermore, the discharge of the tailings pond effluent into a productive marine habitat, also the location of a major salmon gillnet fishery, was a major scoping issue. The Final EIS should provide discussion not only of alternative mixing zone configurations, outfall locations, diffuser designs, and pipeline routes, but the alternative of additional effluent treatment on shore to reduce the mixing zone size or eliminate the need for one altogether. Therefore, a summary of additional wastewater treatment options should be presented in the Final EIS. These include: additional process controls, additional reagent use, additional settling ponds, and pre-mixing in the marine outfall pipe. By additional treatment, the State refers to any additional processes that will improve the quality of the wastewater that leaves the tailings pond and the quality of wastewater sources entering the tailings pond.	117.5 Details of the slurry application to the tailings beach are discussed in the tailings dam design report (Knight and Piesold, 1990). Beach deposition is accomplished by multiple-point spigots. Spigots will be repositioned on a regular and planned basis to promote proper deposition and consolidation of the tailings material. As expected, much of the coarser tailings particles tend to settle from suspension relatively near the point of discharge. Remaining coarse particles, finer particles, and colloidal particles are carried further to the ponded water, or decant pond, where they eventually settle in standing water. Please see FEIS Chapter 4, Surface Water Hydrology Tailings Disposal.
117.6			Impacts to marine receiving waters and aquatic resources should be more fully described in terms of the proposed depths of the outfall pipe and its location. (See comments on the proposed mixing zone for the outfall in separate NPDES comments).	117.6 Water quality in the rechanneled portions of Ophir and Sweeny Creeks are expected to meet all State water quality standards.
117.7			The State understands the intent of the modifications to the applicant's proposal identified by the Forest Service: underground grinding, generators located near Comet Beach, and a riprap channel to return flows to Sherman Creek. Both the mill and power plant locations, as recommended by the preferred alternative, are sited to lessen the noise and fugitive dust at the mine site. Other problems are created by the increased volume of waste rock and the inefficient use of the power plant as a heat source. The riprap channel is proposed to address maintenance of instream flow, water quality parameters, reclamation, and habitat restoration. It does not account for the availability of a local source for construction. Other design and engineering practices that mitigate these concerns should be explored.	117.7 See response to comment 111.12.
117.8				117.8 See response to comment 111.12.
117.9				117.9 Please see the FEIS for discussion of alternate outfall locations and diffuser designs.
117.10				117.10 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.
117.11				117.11 Chapter 2 of the FEIS includes a discussion of water treatment that was not included in the DEIS.
117.12				117.12 Additional material is provided in the FEIS (see Chapter 4).
117.13				117.13 Please see the ROD for a discussion of the selection of the preferred alternative.
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CUMULATIVE IMPACTS

The cumulative effects section should address potential impacts from Forest Service minerals prescription for Tongass National Forest Land Use Designation (LUD) II lands in the Juneau Gold Belt.

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The Final EIS should address the phenomenon that as population increases, there is a resultant increase in demands for recreation, tourism, and fish and wildlife. As this occurs, the fish and wildlife habitats, populations, and opportunities for their use and enjoyment tend to decrease, or require more active management to maintain expected levels of resource utilization.

BASELINE STUDIES

Additional baseline studies are needed and results should be presented prior to permitting. Baseline information on portions of the affected environment is generally lacking or incomplete (See attached specific comments). This information must be quantitative, use standard methods and repeatable transect surveys, and must be collected year-round so that the effects of mining are not confused with seasonal, or other temporal changes in plant and animal communities.

Some of this information is currently being collected by Kensington Venture contractors. Temperature and stream flow gauges were installed in Sherman and Sweeney Creeks in May 1991, and an outmigrant salmonid migration study in the vicinity of Point Sherman was also conducted in May 1991. Stream habitat mapping surveys are currently underway or planned in the near future. Results of these and other on-going studies should be included in the Final EIS.

Information on the impact of changes in water quality on aquatic life in the immediate project vicinity could be improved. Specific baseline studies will be necessary once the tailings disposal site and marine outfall location have been selected.

The use of the No Action Alternative, which is the present exploration site, as baseline is questioned and needs further justification. Water quality impacts (high nitrate concentrations, for example) have already occurred. Upon selection of the tailings disposal site, continued monitoring of an unaffected watershed (Sweeny Creek if Sherman Creek is selected, for example) is advised. This watershed will serve as a control site and act as a better indicator of "baseline" water quality.

PROJECT SPECIFIC COMMENTS

Net vs. "Dry" (Dewatered) Tailings Issue: The State carefully reviewed the alternatives using conventional tailings disposal (Alternatives B, C, and D and the Forest Service preferred Alternative) and the dewatered tailings option (Alternative E). The Draft EIS and supporting technical documents (Knight and Piesold, 1991) have presented good arguments against the dry tailings option including: amount of waste rock, weather/runoff and erosion control, potential for particulate air pollution, and

117.14

The proposed Tongass Land Management Plan (Forest Plan) identifies where known mineral deposits are and could be expected to be developed. Exploration is occurring in these areas and is not expected to change if the proposed forest plan is implemented. Potential mineral activity would change only if areas were withdrawn from mineral entry.

117.15

Thank you for your comment. The FEIS contains additional discussion regarding the effects of population increases on demands for recreation and wildlife resources under the Chapter 4 section entitled Subsistence.

117.16

The Forest Service has conducted baseline adequacy reviews with our own ID Team and using the third party contractor ID Team. The conclusion of these reviews is that the baseline is adequate to prepare the EIS.

Results from studies conducted by Kensington Venture contractors in 1991 include: 1) temperature; 2) stream flow data; 3) outmigration and nearshore habitat studies of salmonids near Point Sherman; and 4) stream habitat surveys. It should be noted that natural flooding has significantly altered the stream habitat in Sherman and Sweeny Creeks. Documentation of new stream habitat conditions will be conducted in July 1992 to establish current characteristics for comparison against those occurring in the July 1991 habitat mapping survey.

117.17

Development of ongoing monitoring plans will occur following issuance of the ROD and submittal by the Kensington Venture of a detailed Plan of Operations. A more detailed summary of monitoring design, objectives and contingencies is included in the FEIS.

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potential for habitat restoration. Hence, the State concurs with the Forest Service that conventional tailings disposal is preferable to the newer "dry" tailings technology. Water quality monitoring of a point source (the marine outfall pipe) presents fewer monitoring difficulties than the non-point source runoff from a dewatered tailings pile and the technology is proven. Although the State is not advocating backfilling of tailings at this time, the Final EIS should further describe the technical reasons for not exploring this option.

117.18

Solid and Hazardous Waste Issues: There have been several changes to the federal hazardous waste regulations in the past few years, in particular the regulations implementing the Resource Conservation and Recovery Act (RCRA) (18 CFR Parts 260 to 272). Solid and hazardous waste practices and permits must comply with new state regulations. Waste rock is classified as solid waste and will require an ADEC solid waste permit per 18 AAC 60.200. The determination on whether tailings will require an additional solid waste permit is pending review of applicable RCRA and State regulations.

Air Quality Issues: The State has worked with the Kensington Venture and issued an air quality "permit to operate" for the current exploration activities. The proposed generators, crushing equipment, fugitive dust sources, control technology and emissions modeling will all be evaluated for an expanded permit. The applicant has installed air monitoring stations at the site in support of this analysis by project technical staff and by ADEC engineers. Further recommendations on air quality operations issues will require this analysis.

Oil/Chemical Leak and Spill Contingency Planning: Since the on-site storage of fuel and liquified petroleum gas (LPG) will reach a capacity of 10,000 bbl, a state Oil Discharge Prevention and Contingency Plan will be required. Some of the material needed for a state contingency plan is covered in Appendix E (Spill Prevention Control Plan). The Final EIS should explore contingencies for a leak or spill as the preliminary planning for an area Local Emergency Planning Committee, which has been initiated in Juneau.

117.19

The Final EIS should highlight safety features proposed for the project (spill prevention and monitoring, process controls, etc.) There is much public concern with accidental spills and response time to detect and correct process failures.

117.20

Monitoring: The information and data provided in the Draft EIS relating to monitoring, analysis and data have been presented in a manner that adequately relates information and data to potential environmental impacts. The outline of the monitoring plan contains all components and procedures. The Draft EIS describes in understandable terms the means by which Kensington

117.18

Please see response no. 100.3.

117.19

Please see response no. 116.9.

117.20

Perhaps the largest concern relates to the need to contain cyanide in the process operation. The Kensington Venture has provided additional information on their plans for batch treatment of tailings in response to comment no. 112.6. See also response no. 116.9.

117.21

A detailed description of these items is available in Kessler and Vigers (1992); a summary of major points is provided in the FEIS (see Chapter 4).

117.22

Please see response no. 93.13.

117.23

A total of eleven trucks delivered 146 tote bags of ore to Lakefield. The shipment weighed approximately 233 tons.

The following test procedures were conducted.

- o Head Analyses
- o Whole Ore Cyanidation
- o Flotation Testwork
- o Cyanidation of the Flotation Concentrate
 - Effect of Fineness of Grind
 - Effect of Preaeration and pH
 - Effect of Lead Nitrate Addition
 - Effect of Retention Time and Solution Change
 - Effect of Cyanide Concentration
- o Effluent Analyses and Treatment
 - Cyanide Destruction Testwork
 - * SO₂/Air Method
 - * Chlorination Method
 - * Peroxide Method
 - Toxicity Testwork
 - Effluent Analyses
- o Settling and Filtration Testwork
 - Settling Testwork
 - Filtration Testwork
- o Tellurium Recovery
- o Bond Work Index
- o Acid Generation Potential

For more detailed information see Lakefield (1990).

117.24

Zero values were not used in the mass balance calculations. The detection limits for the various parameters were used in lieu of a zero value for parameters with concentrations less than the detection limit.

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It should be noted that the actual estimate for mine drainage is in the range of 400 to 600 gpm with a worst case estimate being 1000 gpm. In developing the water balance for design of the tailings disposal facility the worst case value (1000 gpm) is used. However, availability of 1000 gpm cannot be determined until mining commences.

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Venture will control emissions and discharges and which preventive and corrective actions will be taken. While overall environmental concerns were addressed satisfactorily, the Draft EIS contains a few errors, inconsistencies and incomplete information that need to be corrected and addressed in the final EIS. These are detailed in the enclosed page specific comments.

For example, not addressed in the monitoring section of the Draft EIS are marine sediment sampling and analysis. Marine sediment data are provided but no description is provided in the text on sampling sites, sampling procedures and analysis. Potential for bioaccumulation of metals and impacts to aquatic life in the affected receiving waters should be further addressed.

Cyanide destruct process: The Draft EIS should thoroughly explain the reasons for choosing the alkaline chlorination cyanide destruct system. Furthermore, natural degradation processes for cyanide (photodecomposition, etc) and the effects of local climatic conditions on these processes is not described. While realizing that the water quality projections did not assume natural degradation for a conservative estimate, the Final EIS should better explain which processes are expected to operate at the tailings pond. Information in the Draft EIS on the variability of the process, reagent use, backup treatment, batch releases of cyanide treated water to the tailings pond, and detection limitations on the various cyanide products should be fully described. The potential for process upset conditions and concomitant control measures should be fully explored. The potential for high residual chlorine levels in the effluent needs to be addressed.

Projected tailings pond water quality: The pilot tests used to determine the tailings pond effluent quality are essential for estimating dilution requirements. A more thorough description of the tests used, the decant intervals (2 hour, 48 hour and 10 days), process simulation, and the way representative ore samples were chosen should be detailed. Also the use of zero values as a substitute for "below detection limit" and its implication for projecting cyanide and metals concentrations should be addressed. Specifically, explain the inherent bias in the use of zero values and its effect on resulting interpretations.

Instream Reservations: The use of Sherman Creek to supply the mill or domestic water needs of the mine may remove too much water from the stream to maintain fish and developing eggs during low flow periods. However, it appears that the underground mine "could produce an estimated 1000 gpm." The Final EIS should include a discussion of mitigation/enhancement options for this stream system. A discussion of well fields to provide mill process water during low flow periods should also be provided.

The State is concerned that adequate minimum flows be maintained

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to protect fish habitat values and to that end has developed preliminary instream flow requirement estimates based upon the various flow information that is currently available (Tables 1 and 2). We will work with the Forest Service to further refine the amounts of water that will be needed during low flow periods. Results of this analysis should be included in the Final EIS. Enhancement opportunities for unavoidable losses in fisheries values or streamflows should also be presented in the Final EIS.

117.26

Thank you for extending the comment period on this most important project. The lead agency review team, the applicant, and the consultants have shown a willingness to work with and provide information to the agencies during the Draft EIS review. The State appreciates the continuing efforts of the Forest Service in developing this challenging analysis and looks forward to the opportunity to participate in the development of the Final EIS.

Sincerely,



Paul C. Rusanowski, Ph.D.,
Director

ADF&G will set minimum stream flow requirements that the Kensington Venture will be required to observe to prevent impacts to fish and aquatic habitat resulting from diversion of low stream flows. As previously noted, it is not known at the present time if sufficient mine drainage water will exist to meet process water and domestic water requirements. Well fields would be the logical alternative source for additional fresh water needs if underground mine drainage does not provide sufficient quantities.

117.26

These items are addressed in the FEIS (see Chapter 4).

Enclosure 1: State Page Specific Comments
Enclosure 2: ADEC memo to DGC
Enclosure 3: ADFG memo to DGC w/attachments
Enclosure 4: ADNRR memo to DGC w/attachments
Enclosure 5: DCED memo to DGC

cc: Commissioner Heinze, DNR
Commissioner Olds, DCED
Commissioner Rosier, DFG
Commissioner Sandor, DEC
Roger Birk, USFS, Juneau
Harold Geren, EPA, Seattle
Glenn Justice, COE, Anchorage
Steven Pennoyer, NMFS
Murray Walsh, Community Development, CBJ
kensington distribution

117.27
Please see response no. 117.1.

KENSINGTON DRAFT EIS
ENCLOSURE 1
PAGE SPECIFIC COMMENTS

117.27
General:

Add a table of contents or an index to the document.

117.28

There is no mention of timber removal from the proposed mine site. If there is to be any timber transferred into the water for transport to a mill it should be included in the EIS.

SUMMARY

S-1

117.29

(3rd column, page 1-1, page 2-33, et al) The full production work force is given as 340 people; but Table 2-5, on page 2-50, says 360. Which is correct?

S-3

Explain the technical reasons why the Forest Service alternatives included a single cyanide destruct process for the project. On page 2-8, information on three processes (alkaline chlorination, SO₂/air, and hydrogen peroxide) were reviewed. The technical support document (Lakefield, 1990) presented information on alkaline chlorination as the best available treatment process for cyanide destruction at Kensington. This was selected based on ore mineralization and the techniques used for ore production (page 2-8), but no further details were provided.

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Ore geochemistry, although variable throughout the ore body, is an uncontrollable input to the milling process. The techniques used for production are controllable based on available technologies and their correct applications. The EIS should detail the specific quantities (system complexity, cost, history of reliability of the application, etc.) that factored into this cyanide destruct alternative. A specific concern is the high use of chlorine required for the process, and the resulting need for mill effluent monitoring and an effluent limit for residual chlorine. Transportation, storage and proper handling of large quantities of chlorine are also of concern.

S-5

117.31

(Surface Water Hydrology) The mean annual flow for Sherman Creek is reported as 30.8 cfs. Estimates of mean annual flows for Sweeney and Slate Creek are 20 and 8 cfs, respectively. Please identify whether the significantly higher flow was a major factor for choosing Sherman Creek for the tailings disposal and effluent treatment water source.

S-5

117.32

(Surface Water hydrology) The reason that "trace metals content is generally below detection limits" is because analytical methods chosen are not sufficiently sensitive for all metals, e.g. copper and cadmium. This can not be used to imply that the metals were not present but rather that a more

117.28
A Timber Harvest Plan will be required by the Forest Service as part of the project's Plan of Operations. The Kensington Venture has identified the potential to use a portion of the logs as "corduroy" fill and lumber to be milled onsite. The timber harvest plan would apply to both private and public lands.

117.29
Full production workforce of 340 is correct.

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Please see response no. 93.13.

117.31

Flow rate in Sherman Creek was not a major factor for choosing the tailings location. Sherman Creek is proposed as the source of makeup water to the project except during low flow events. Neither it nor any other stream is proposed for use as an "effluent treatment water source." Such use would not be allowed under the terms of the Clean Water Act which restrict the discharge allowed from a facility to the amount of net precipitation.

117.32

Laboratory detection limits were correctly used and interpreted throughout the DEIS. There is no attempt to imply that the constituents that were not detected do not in fact exist in the water; merely an acknowledgement that they were not found using the EPA approved analytical methods listed.

Kensington DEIS/Encl. 1

2

sensitive method should be chosen, so lower concentrations can be detected and used to predict tailings pond and effluent concentrations. These analyses should be repeated using an appropriate analytical method and results reported in this and other sections of the EIS.

3-19, 3-20, 3-22, 3-24 Biological studies conducted to date have been inadequate. The following is a summary of the studies done to date and the baseline information that is still needed:

Pelagic fish

No on-site research of juvenile or adult herring, or sampling for the presence of larval forms of pelagic fishes. Need data on seasonal presence and timing by depth: trawl sampling for adults, plankton tows for larvae.

Shellfish

Limited surveys:

Three shrimp pots, April 19-21, 1988

Two crab pots, April 20-21, 1988

Twenty tanner pots, April 15-16, 1989

Need repeatable surveys on a seasonal basis. Need plankton tows for larval presence, timing and depths.

Bottomfish

Limited surveys:

Three, mile-long longline sets, two at 155 fathoms, one at 30-100 fathoms, four hours each, April 15-16, 1989.

Need repeatable surveys on a seasonal basis, need sampling to determine presence, timing, and depths of larval forms.

Inter-tidal Studies

Cursory beach walks, April 18-21, 1988. Very little was found. One would not expect to find much this time of year. Need repeatable surveys on a seasonal basis.

Sub-tidal Studies

Four, 100 ft. transects, April 1988. Need repeatable surveys on a seasonal basis, need site-specific sampling of infauna on soft bottom areas such as the proposed barge landing area.

Salmon

Review of literature and commercial harvest data, beach seining of juveniles,

117.33

Please see responses no. 5.2, 86.10 and 99.29.

May 1991, gravel size sampling of on-site creeks, April/May 1991, adult escapement studies, fall 1990, pink and coho adult stream life studies, fall 1990. Need additional adult escapement studies, need detailed presence, timing, and migration studies re juvenile salmonids, by species, emigrating from Berners River, e.g., how long are they in the area, at what size do they leave the inshore area, do they turn north or south, etc.

Habitat Mapping None. Need habitat mapping for all resident species found in the outfall area.

(Aquatic Resources, last paragraph, anadromous species) Anadromous species should include eulachon. This anadromous species is abundant in the area during the month of May, and is extremely important to the local natives and wildlife during that time. Major spawning areas include the Chilkat, Chilkoot and Berners Rivers.

(Aquatic Resources) "The commercial salmon fishery in upper Lynn Canal is active from mid-June into early October. The fishery is currently restricted to drift gillnets." Reconcile this statement with the information on page 1-5 (Commercial Fishing): "Both gillnetting and long-line fishing techniques are used."

(Dolly Varden) The text should also mention that Dolly Varden are very migratory. For instance, Dolly Varden which overwinter in Chilkat Lake are known to migrate to Juneau, Gustavus, and Hoonah. Dolly Varden tagged at Chilkat Lake have been recovered at Pt. Sherman.

S-11 Sherman and Sweeney Creeks are cataloged and protected as habitat for anadromous salmon, trout and char. We will be working with the Forest Service to determine needed instream flow reservations.

(Land Use) "The project and adjacent area is classified as a LUD II (Land Use Designation) by the Forest Service in the Tongass Land Management Plan as amended during the winter of 1985-1986." Explain, here briefly and in Chapter 3, how the recent Tongass Land Management Plan and Tongass Reform legislation may affect land use designations in the project area and its environs.

(Surface Water Hydrology) "Cyanide concentrations in the tailings pond would be within drinking water standards..." Since the tailings pond water will not be used as drinking

117.33 May 1991, gravel size sampling of on-site creeks, April/May 1991, adult escapement studies, fall 1990, pink and coho adult stream life studies, fall 1990. Need additional adult escapement studies, need detailed presence, timing, and migration studies re juvenile salmonids, by species, emigrating from Berners River, e.g., how long are they in the area, at what size do they leave the inshore area, do they turn north or south, etc.

117.34 The description of anadromous species is corrected in the FEIS (see Chapter 3) to include eulachon.

117.35 The former statement is in reference to salmon only, while the latter statement includes fisheries targeted for other species as well.

117.36 This characteristic is covered in greater detail in the FEIS. Recent reports by Erickson et al. (1990) and Erickson and Marshall (1991) provide good documentation of the extensive migrations of Dolly Varden.

117.37 Comment noted.

117.38 The TLMP revision has been released as a DEIS and is not final. The DEIS includes a minerals management prescription with an emphasis on encouraging and facilitating the prospecting, exploration development, mining and processing of mineral resources.

117.39 The statement clearly frames the discussion of water quality and its effects on terrestrial wildlife in terms many members of the public are familiar with.

Kensington DEIS/Encl. 1

4

water this statement is not relevant and should be omitted. The statement should just address standards for fresh water aquatic life.

S-11

117.40

(Ground Water Hydrology) "At the time of mine closure, the portals would be sealed and workings below the lower portal would flood. This would limit free oxygen reaction with any acid generating materials left in the mine." Please explain this statement in the context of information presented on page 4-41 which imply that a low potential for acid generation exists.

S-11

117.41

(Aquatic Resources - Marine) "The [marine] discharges would be expected to increase the heavy metal concentrations in bottom sediments in the vicinity of the outfall. Sedentary organisms living within these sediments could be expected to bioaccumulate certain metals." Please discuss this impact further. Give estimates of sediment loading and areal extent of the affected environment near the outfall, and distribution patterns of sediment expected from the outfall. If possible, give an estimate of the affected species that could reasonably be expected to bioaccumulate metals over the 12-14 year life of the project and the effects of that bioaccumulation to the resource.

117.42

The consultants on this project have keyed biologic effects in the marine receiving waters to estimated exposure times. Further development of this in the EIS would be helpful.

S-11

117.43

(Aquatic Resources - Marine) It is stated here and elsewhere that "to reduce the risk [of accident when off-loading supplies], the Kensington Venture has committed to only unloading barges at Comet Beach when waves are less than 3 feet." The State is concerned that if this provision is actually forwarded in a Spill Contingency plan, it would be difficult for the Venture to comply with, as well as the for agencies (ADEC, EPA, and the Coast Guard) to enforce, if it is part of an approved spill contingency plan. Give more information on how this would be accomplished and whether the Kensington Venture has discussed this provision with fuel suppliers, who may find it economically unfeasible to hold a barge for extended periods of when seas are greater than 3 foot. The information on page A4 indicates that increased onshore storage will allow operations to "weather-out periodic bad sea conditions which can be expected during winter months." This solution increases onsite storage and requires additional levels of spill prevention.

S-11

117.44

(Soils/Vegetation/Wetlands) "At mine closure, disturbed areas would be stabilized and reclaimed according to a Forest Service approved reclamation plan." The state also has provisions for reclamation (AS 27.19 and 11 AAC 97, effective

117.40

The statement points out that although the potential for acid formation is small it still exists. Flooding the lower workings would reduce the potential even further.

117.41

A detailed description of these items is available in Kessler and Vigers (1992); a summary of major points is provided in the FEIS (see Chapter 4).

117.42

This matter is covered in greater detail in the FEIS.

117.43

On shore storage vs. more frequent deliveries is one of the many trade-offs that must be considered when evaluating a large, remote project like the Kensington Project. The Kensington Venture bears the responsibility for supplier delays caused by restrictions on barge unloading. It is largely a private financial risk that is outside the scope of the EIS.

117.44

The Kensington Venture will supply a reclamation plan to each agency having authority over the project. The agencies will review the proposals under their regulations and determine technical adequacy. Once adequacy has been achieved permits will be issued.

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15 October 1991), as well as the City and Borough of Juneau large mine permit requirements. Explain the process that will be used for agency review of the reclamation plan.

S-12

(Soils/Vegetation/Wetlands) "No federal or state listed threatened or endangered plant species are known to occur in the project area. Field surveys verified the existence of one proposed state listed species, Betula papyrifera var. commutata (ACZ, 1990). Approximately six populations of this plant located in the Sherman Creek basin, could be impacted." Refer also to sections on page 3-36 on this potential impacted species. Describe regional distribution of this species and the potential for repopulation of these trees after cessation of mining activities. Provide further information in the EIS and/or reclamation plan on how loss of these stands will be mitigated. Include information on whether riparian habitat created with the rerouting of streams over the Sherman Creek tailings area could provide a suitable revegetation opportunity for this species.

S-12

(Recreational Opportunities) What is the possibility that population increases generated by the proposed Kensington Mine will diminish the quality and quantity of recreational opportunities for Juneau residents?

A-345

117.46

The mine area is presently used by only a small portion of the Juneau public. However, the mine's impact on recreational opportunities will likely be the greatest upon those opportunities located in Juneau. Recreation opportunities (both indoor and outdoor) will not be directly impacted by the mine, but by the large number of new people brought to Juneau by the mine.

Many local recreational opportunities are presently utilized at or above capacity.

S-13

(Socioeconomics) "It is not likely that any of these alternatives would generate significant impacts on Haines or Skagway." ADEC has received a petition from 135 part- or full-time residents of Haines, 43 of whom hold SE Alaska gillnet fishing permits. Concern has been expressed as to the impact of the project on the Lynn Canal fishing grounds in the vicinity of the project. An overview of fisheries resources at potential risk from this project should be provided. ADF&G and the Department of Commerce and Economic Development are available to provide the Forest Service with information for this analysis.

117.47

CHAPTER ONE - PURPOSE OF AND NEED FOR ACTION

1-1

(Introduction) "The Kensington Venture will prepare and submit a Plan of Operations to the Forest Service following

117.45

Please see response no. 93.58.

117.46

Please see response no. 116.48.

117.47

This comment was directed at the Socioeconomic section of the DEIS summary. Summary statements regarding the fisheries resources are found under the Aquatic Resources section on DEIS page S-11. Aquatic resource impacts are clarified in FEIS, Chapter 4.

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completion of a Final Environmental Impact Statement (FEIS). "Describe the review process for this Plan of Operations through the Forest Service and state resource agencies. As this plan actually implements the work described in the Applicant's Proposal and modifications to it affected by this EIS, review by the agencies is needed. The Plan of Operations should be developed and distributed in a timely manner to the agencies, so that operations such as monitoring can be reviewed."

1-2

(Purpose and Need for Action) Reference to Tongass Land Management Plan (USFS, amended 1986) should be updated with new information from the Tongass Reform Act (see comments on page 8-10 as well). The minerals prescription for much of the Forest Service land in the Juneau mining district may increase the potential for mineral exploration and development.

1-4

(ISSUE AND CONCERNS - Technical Feasibility) This section states that a scoping issue was to address the technical feasibility of various project components. "Specific concern has focussed on items such as tailings dam failure or uncontrolled chemical discharges." Provide further information in the EIS on what monitoring will be implemented at the project to avoid catastrophic as well as chronic adverse effects to the environment.

Public concern has been expressed about a time lag between occurrence of technical failures or process upsets, the recognition of the problem, and response time. Further information should be provided in the EIS on how the Kensington Venture and the agencies can fashion frequent, perhaps continuous, monitoring of some project components such as the tailings dam and mill discharge to the tailings pond. Public concern has been expressed on how this process will work.

1-5

(OTHER ACTIVITIES NEAR THE PROJECT - Greens Creek). The stated life of the Greens Creek project is 10 years. New ore reserve estimates have increased the life expectancy of the project. Include new estimates in the EIS and address any resulting cumulative impacts (environmental, transportation, socioeconomic, etc.) to the Kensington Venture project.

1-7

(FEDERAL PERMITS - Executive Orders 11990 and 11998.) "There is currently an emphasis on "no net loss" wetlands policy as outlined in and agreement between the Corps (of Engineers) and EPA; however, this policy is presently under review to determine the most appropriate implementation practices in Alaska." The reference to a possible change in the way wetland loss is determined in Alaska is speculative. If wetland policies should change in Alaska, however, the final EIS should address these impacts.

117.48

Please see response no. 117.14.

117.49

Geotechnical monitoring will be provided during and subsequent to dam construction. As part of the design document, a Site Inspection Manual and Operations & Maintenance (O&M) manual will be developed. Details of the monitoring program are typically presented in these documents. Monitoring includes the installation of piezometers within the embankment structure to record and measure piezometric levels and a series of survey points to determine settlement rates.

117.50

The Forest Service, along with EPA and ADEC, will work to improve existing monitoring programs. There are some items, such as pH that can be continuously monitored. Other parameters, such as metals content, require time consuming technically rigorous laboratory procedures.

The millstream would be monitored on a continuous basis as part of the metallurgical process (i.e., process chemical concentrations, metal assays, pH, etc.). Monitoring CIL effluent would be conducted prior to batch discharge to the tailings pond to ensure proper cyanide destruction has occurred. This monitoring would be conducted during periods when mill effluent discharge to the tailings pond was planned.

The Kensington Venture has prepared a Draft Environmental Plan which includes:

- Groundwater Monitoring Manual
- Freshwater Monitoring Manual
- Sediment Monitoring Manual
- Biological Monitoring Manual
- Wildlife Monitoring Program
- Integrated Sampling Schedule
- Corrective Action Plan

The details of this plan will be finalized as part of the Forest Service approval process for the Plan of Operations. This approval follows the FEIS and ROD.

117.51

Thank you for the information on Green's Creek. Although the expanded reserves have been announced, there is no announcement of how it will affect the operation (i.e., longer life or larger output). For the FEIS we have assumed no change of mine life.

117.52

The referenced statement is an accurate description of the status of wetland regulation in Alaska and serves to notify the reader that potential changes in regulatory approach to wetlands could affect the findings in the FEIS. The FEIS considers the impacts to wetlands under current regulatory guidelines.

Kensington DEIS/Encl. 1	7	<p>(PERMITS - STATE OF ALASKA) ADEC Burning Permit - The EIS should describe the fate of any ash generated by open burning; this ash could be considered a solid waste requiring proper disposal per 18 AAC 60.</p> <p>The 11st of ADEC permits should include wastewater disposal for domestic wastewater. It is not clear if wastewater has been combined with the tailings pond outfall.</p> <p>(PERMITS - STATE OF ALASKA/Solid Waste Management Permit) A) The disposal of hazardous waste is not governed by a solid waste permit. There is a separate permit process for hazardous waste (Title 18 Alaska Administrative Code Chapters 62 & 63); B) The facility will need to apply for a solid waste disposal permit for the final waste rock disposal areas and potentially the tailings (see cover letter); C) ADEC recommends that the Kensington Venture apply for any permit more than 60 days from the start of operations to ensure that the project will not be delayed in the event of ADEC's receipt of an incomplete permit application.</p> <p>An ADEC wastewater disposal permit should be described in this section.</p> <p>If there is a marine outfall, there will need to be a right-of-way permit obtained from the Department of Natural Resources.</p> <p>Under "Water Rights Permits", para. 1, 1st sent., it is the right, not the water itself, of course, that is "attached to the land" when the appropriation is perfected. The sentence should be rewritten, or the "become" should be "becomes", since its antecedent "right" is singular.</p> <p>Under "Water Rights Permits", para. 3, the issuing agency is now the Alaska Division of Water.</p>	<p>117.53</p> <p>117.54</p> <p>117.55</p> <p>117.56</p> <p>117.57</p> <p>117.58</p>	<p>117.53</p> <p>117.54</p> <p>117.55</p> <p>117.56</p> <p>117.57</p> <p>117.58</p>	<p>ADEC Burning Permits are required for open burning of slash when black smoke is generated. The Kensington Venture will obtain this permit as part of their construction program, as required.</p> <p>A permit is required for operating an incinerator at the project. Ash generated in an incinerator must be disposed of in an approved ash pit. Ash will be mixed with cement to improve handling characteristics. Ash from the incinerator will be disposed of at an approved site. The ash generated in the incinerator will be derived from normal domestic waste from the personnel camp.</p> <p>Domestic wastewater will be secondarily treated prior to discharge. It will be piped to the tailings pond outfall and discharged. Domestic wastewater will not be introduced directly to the pond.</p>	<p>117.53</p> <p>117.54</p> <p>117.55</p> <p>117.56</p> <p>117.57</p> <p>117.58</p>	<p>117.53</p> <p>117.54</p> <p>117.55</p> <p>117.56</p> <p>117.57</p> <p>117.58</p>	<p>The FEIS reflects your clarifying information on solid waste regulation in Alaska.</p> <p>The FEIS reflects your suggestion.</p> <p>The FEIS reflects your clarifying information.</p> <p>The FEIS reflects your clarifying information.</p>	<p>117.53</p> <p>117.54</p> <p>117.55</p> <p>117.56</p> <p>117.57</p> <p>117.58</p>	<p>117.53</p> <p>117.54</p> <p>117.55</p> <p>117.56</p> <p>117.57</p> <p>117.58</p>	<p>The text identifying the upper portal as 1600 foot elevation and Figure 2-1 showing the helipad/portal at 2000 foot have been reconciled. The upper portal is at 2000 foot elevation.</p>	<p>117.59</p>	<p>117.59</p>	<p>Please see the discussion of Management, Mitigation, and Monitoring on DEIS pages 2-41 through 2-48.</p> <p>Examples of successfully reclaimed disturbances within the Kensington project area are discussed in connection with the description of the existing vegetation, (DEIS page 3-33, paragraph 2, column 3), soils (DEIS page 4-41, and wetlands (DEIS page 4-43, and last paragraph and page 4-44, first paragraph) resources found in the area.</p>	<p>117.60</p>	<p>117.60</p>
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- 117.61 Discussion of alternative ways to reclaim affected lands and waters to some useful status should also include discussion of costs. Reclamation costs need to be considered up front in the EIS to determine their economic feasibility and practicality as well as the cost of bonding.
- 2-3 (Column 1, Last Paragraph) Given the concern for minimizing disturbance to wildlife, particularly mountain goats, what is the function of the two helpads described here and shown in figure 2-1? How often will they be used? Are they necessary for routine operations?
- 117.62 (WASTE ROCK STORAGE) The applicant projects the production of approximately 400 tons (or 270 cubic yards) of waste rock per day. Some of this would be used for construction of the tailings pond embankment, roads or foundations. Projected total waste rock for the mine is estimated at 1,200,000 cubic yards.
- 117.63 Provide additional information on projected waste rock. With some alternatives, quarrying of additional rock will be necessary to meet construction material demands (page 2-18). Provide the storage requirements (locations of proposed storage sites, acreage needed, tests for geotechnical suitability of sites, etc.) of proposed interim or permanent storage areas for waste rock. A solid waste permit is necessary for such permanent storage (see cover letter). Long term storage estimates should be made.
- 117.64 The Green's Creek Mine on Admiralty Island, has recently demonstrated that initial estimates of waste rock quantity may be greatly underestimated at the pre-development phase of project planning. What are the odds that greater quantities of waste rock will be generated? Where would any additional waste rock be disposed?
- 2-5 Various uses of waste rock are described, but "The remaining waste, 1,080,000 cubic yards must be either temporarily stockpiled and utilized throughout the mine life in tailings dam construction or placed in a permanent waste rock disposal site." What are the various waste rock disposal sites proposed for each of the alternatives?
- 117.65 (Underground Crushing/Underground Grinding Facilities) The applicant has proposed to move grinding facilities to the surface, with plans to mitigate noise impacts. Air quality in the mine is a concern. Provide estimates of additional noise generation and impacts from fugitive dust if the grinding facilities are relocated.
- 2-6 (ORE PROCESSING/Flotation) The Kensington Venture has estimated a mill feed of 4000 tons of ore per day. This is
- 117.61 Please see response no. 7.5.
- 117.62 The helpads shown at the main facilities area and the upper portal are for emergency use and intermittent maintenance only. The upper pad is especially needed as there is no road to the upper portal and access is limited.
- 117.63 The need for additional quarry sites in the alternatives is driven by the timing of waste rock availability relative to the need to construct certain facilities. The problem is best illustrated in Alternative D where construction of the initial tailings dam would require large quantities of rock that will not be available at the time of construction. This means that rock for the embankment would be quarried to construct the dam. Waste rock would then not be utilized. Under this alternative the permanent waste rock disposal site would be adjacent to the lower portal as shown on page 2-37 of the DEIS.
- 117.64 The waste rock projections in the FEIS are the best available at this time. There are currently no contingency plans for additional waste rock disposal. However, the site adjacent to the lower portal is a reasonable contingency location since it is proposed to be used as either a permanent or temporary storage site in all alternatives.
- 117.65 Please see the complete project descriptions in FEIS Chapter 2.
- 117.66 The noise impacts and dust impacts of both surface and underground grinding are fully disclosed in Chapter 4 of the FEIS.
- 117.67 Estimates of ore and waste production were provided by the Kensington Venture as a result of their mine planning efforts. They are overall life-of-mine numbers. Large short term variations in waste production are expected. This should not influence the assessment of impacts as they are largely driven by total quantities of these materials produced rather than by rates of production. The one notable exception is the need to produce sufficient waste rock for dam construction under Alternative B.

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ten times the figure estimated for waste rock production cited on page 2-4. (See also page A-7). The selectivity of the ore/waste rock removal process appears to be highly efficient. Provide additional information in the EIS on how these estimates were derived and whether such efficiency is predicted throughout the mine life of 12-14 years. If the ratio of ore-bearing rock versus waste rock should change during the run of the project, tailings and waste rock storage estimates should be adjusted accordingly.

117.67

2-6, 2-18, and 2-48 deal with the mill and power plant sites and preferred alternative. Alternatives other than relocation should be evaluated to mitigate noise and fugitive dust concerns.

117.68

2-7 (ORE PROCESSING/Tank Cyanidation) "A lime slurry is added to maintain a pH greater than 12 (emphasis added) as the concentrates move into a series of tanks where cyanide is added. A high pH is needed to prevent the cyanide from volatilizing into the air as hydrogen cyanide. Approximately 25 to 30 pounds of lime would be used per ton of concentrated (2 to 4 tons of lime per day) for pH control." Provide a better definition of the pH conditions expected in the process and how they will be controlled. The insert on page 2-8 implies that alkaline chlorination conditions are between 10.5 and 11.5 for this process.

117.69

Mill process water at the Greens Creek mine, for example, is highly variable; pH readings greater than 11 have been measured in the tailings pond there and receiving water effluent has exceeded NPDES requirements. Greens Creek pH control is further complicated by the production of organic acids by the muskegs that drain into the tailings pond. pH control has proved to be difficult at Greens Creek. While not implying that Kensington's operation will experience similar problems, DEC will expect compliance with NPDES permit requirements for a 6 - 8.5 pH range for the effluent. (the Alaska Water Quality Standards for receiving waters pH is 6.5 - 8.5). Address process pH control, especially identification of reagents that will be used specifically for pH control. More information on pH monitoring and corrective measures should be provided.

2-7

(ORE PROCESSING/Tank Cyanidation) "Sodium cyanide usage would depend on the concentrate grade, and may vary from 5 to 10 pounds per ton of concentrate." The potential doubling of cyanide usage, depending on ore grade, results in broad estimates of project cyanide and other reagent usage. It also implies variable grades of ore, which affects mass balances of reagent use, planning for on-site storage of reagents, and estimates of tailings that have undergone cyanidation. Examine the assumptions made on uniform or variable ore grade

117.70

117.68

Additional mitigation is analyzed in the FEIS.

117.69

Greens Creek has recently installed an advanced treatment system to remove residual cyanide metals, solids, and maintain a constant pH to the holding pond. The acidic muskeg material that the pond was constructed over results in a slightly reduced pH when compared to the mill effluent.

Effluent pH control is probably the easiest parameter to satisfy. Either mill or final effluent pH can, if necessary, be adjusted by the addition of acid or base to ensure that the final permit requirement is met at the point of compliance. This is mandated by other federal and State laws.

117.70

Please refer to response 93.18 regarding ore variability throughout the life of the project.

Regarding cyanide consumption and pilot plant effluent studies conducted by the Kensington Venture, the following explanation is provided. Initially in the test work several parameters were evaluated to determine the optimum gold recovery and limiting criteria. These included the effect of fineness of grind, preparation and pH, lead nitrate addition, retention times and solution change and cyanide concentration. These studies by Lakefield (1990), like the ore variability tests, do not indicate significant variations in cyanide consumption utilizing the carbon-in-leach procedure. Gold recoveries in the range of 97 percent were consistently achieved. The optimum cyanide requirement (NaCN) is 2.5 lbs/ton of ore. It should be emphasized that a key objective of the studies conducted in Lakefield Progress Report No. 4: The Recovery of Gold (January, 1990) involves the investigation of the variability of other zones in the ore body and the effect on the standard flowsheet.

throughout the life of the project, and how these grades affect estimates of cyanide and other reagent usage. Explain how the cyanide concentrations used in the pilot plant effluent quality studies were obtained.

(ORE PROCESSING/Tank Cyanidation) "Leach tailings are then combined with the pre-cyanidation floatation tailings ... and pumped to the tailings pond." Provide the rationale for combining treated and non-treated tailings and whether it is based on toxicity reduction through mixing of more or less inert tailings with treated tailings, or other considerations.

(Gold Recovery) The non-product slag from the gold recovery furnace (if any) is not among the process solid wastes listed in 40 CFR 261.4(b)(7)(i) & (ii) and 18 AAC 62.020, that are exempted from being hazardous wastes. So the furnace slag is a solid waste upon which a hazardous waste determination should be conducted under 40 CFR 262.11.

(ORE PROCESSING/Chemical Cyanide Destruction) "Alkaline chlorination represents the best available treatment process for cyanide destruction at Kensington (Lakefield Research, 1990). If necessary, secondary treatment process would be employed to meet discharge standards required by ADEC and EPA." The State is encouraged that the applicant has researched the technologies available for cyanide treatment and has shown a willingness to employ additional treatment, if necessary, to meet permit water quality standards. If possible, describe options for additional treatment (settling, ion exchange), including possible trade-offs such as more surface disturbance for settling facilities or increased reagent usage.

Because of analytical limitations, it may not be possible to measure cyanide concentrations at state water quality level. Explain how the need for additional treatment will be determined.

What types of additional treatment are envisioned here? Discuss treatment as an alternative to a mixing zone.

Presumably, the current plan of tailings effluent disposal is based on what is economically practical as well as what is physically or chemically possible. However, this statement (quotation above) leads one to conclude that there are other viable treatment alternatives which have not been addressed.

The Forest Service should also be aware that cyanide detection methods, use of total, free and weak acid dissociable cyanide, cyanide permits limits and trend analysis of cyanide results encompass some technical concerns that ADEC, EPA and current

117.71

Of the total tailings stream, leach tailings contain the largest fraction of material with acid producing potential. Flotation tailings contain significant amounts of material with acid buffering capability. Mixing the two streams is needed to produce a final product with self buffering capability rendering the total waste stream non-acid generating. Please see page 4-41 in the DEIS.

117.72

Please see response no. 93.13.

117.73

The measurement of ambient cyanide criteria concentration are generally beyond the capabilities of current accepted analytical techniques. While several methods are experimentally used for lower level analysis (chromatographic analysis of specific species) these techniques are not available to most laboratories nor are they accepted by EPA.

117.74

Please see responses no. 86.4 and 93.13.

117.75

Please see response no. 86.4.

11

mining operators have not resolved. Further details will be provided in the State's comments on the project NPDES permit.

2-8

(Alkaline Chlorination) Is it accurate that "Alkaline Chlorination is the most widely recognized cyanide destruction process based upon operation experience and engineering expertise"?

Review of the literature on cyanide and cyanide destruct practices revealed the following:

Alkaline chlorination is the most widely recognized destruction process used in the mining industry in terms of engineering expertise and operating experience. However, McGill and Comba (1990)¹ note that "the residual chlorine compounds present can be toxic to aquatic life. In the case where decant waters are discharged, the solution will require dechlorination. Addition of SO_2 or sodium sulfite has been effective in dechlorination of the solutions." They conclude that if "removal of iron cyanides is not required and the initial thiocyanates are low, not causing prohibitive chlorine consumption, alkaline chlorination provides a viable treatment method for the removal of weak-acid-dissociable cyanide and metals. Although this method of cyanide destruction has been used in the mining industry for years, it is often being replaced by new generation techniques such as the oxidative hydrogen peroxide and SO_2 /air processes."

Scott (1989)² reported that of 50 Canadian mills which used cyanidation in 1988, 23 (46%) used cyanide destruction, 10 used the SO_2 /air process, 12 used H_2O_2 . The one mine which used alkaline chlorination to destroy cyanide in 1988 switched to H_2O_2 in 1989. Alkaline chlorination was the first cyanide destruct process used in Canada, but it has "almost fallen into disuse in favor of more effective and less costly methods (Scott 1989)." Scott concludes that "the chief disadvantages of alkaline chlorination are: the inability to remove iron cyanide, the cost, and the occurrence of residual chlorine at concentrations toxic to fish, to name just three."

The INCO process (sulfur dioxide in air) and the Degussa

¹ McGill, S. and P. Comba. 1990. A review of existing cyanide destruction practices. Proceedings of the Nevada Wildlife/Mining Workshop, Nevada Mining Association and Nevada Department of Wildlife, Reno, Nevada p. 172-185.

² Scott, J.S. 1989. An overview of gold mill effluent treatment. In: Environment Canada, et al. sponsors; Proceedings, Gold Mining Effluent Treatment Seminars. p. 1-36.

117.76

Please see response no. 93.13 JMM (1992)

117.77

Please see response no. 93.13.

117.77

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process (hydrogen pyroxide) are briefly mentioned, but listed as being not suitable for the ore type. Due to the publicity the other processes have received, especially the INCO process which is utilized at McCoy Cove and also which Echo Bay proposes to use at AJ, it is important to provide more detail for the reader as to why the Alkaline Chlorination process is the best one for these ores and site.

2-8

117.78

(TAILINGS DISPOSAL) Regardless of which alternative and/or method decided upon for final tailings disposal, the tailings disposal site may require a solid waste permit (see cover letter).

2-9

117.79

(TAILINGS DISPOSAL/Wet Tailings Disposal Sites) "Review of the dam design would be conducted by the Forest Service and the City and Borough of Juneau. The final design approval would be provided by the Alaska Department of Natural Resources dam safety engineer." Describe any agency oversight on inspections of the dam throughout the life of the project and whether adherence to the original design or modifications thereto will be reviewed by the Forest Service and DNR. Since the dam will be built in stages, there should be periodic engineering inspections.

2-9

117.80

(TAILINGS DISPOSAL/Wet Tailings Disposal Sites) "Borrow areas would be confined to the tailings basin to minimize the disturbance area and increase the capacity of the structure." The State is encouraged that the applicant is minimizing the waste rock produced by the mine. In the Sherman Creek disposal option, there may be a need for additional waste rock for construction which will require quarrying till deposits. In this case, the applicant will minimize the visual impact of the quarrying since the area will be covered and reclaimed within the tailings basin.

Further description is needed on how these borrow sites within the tailings basin will be excavated; depth of sites, storage capacity for water within them before they are covered by tailings impoundment water, and how the tailings beach concept will be affected by these sites. Although this seems a very attractive option in concept, provide more information on how these borrow sites will affect the operation of the tailings facility.

2-10

117.81

(TAILINGS DISPOSAL/Wet Tailings Disposal Sites, Column 1) The diversions of Ophir and Sherman Creeks should be displayed in a map or plan form. Figure 2-5 does provide a minimal amount of detail of the proposed Ophir Creek diversion but the diversion, water supply intake, energy dissipator and pipeline for the Sherman Creek Diversion are not shown.

117.78
Comment noted.

117.79

ADNR will approve each modification to the dam prior to construction proceeding. ADNR, CBU and the Forest Service will work cooperatively to assure adequate monitoring of dam construction.

117.80

Engineering details on the borrow sites are not available at this time. Having quarry areas within the impoundment should not affect thin layered deposition of tailings behind the dam.

117.81

Engineering design level details of these structures are not required for the evaluation of environmental impacts.

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13

Note also that the habitat values of these stream reaches should be discussed in the description of the existing environment in Chapter 3. Some of this information is provided in Chapter 4, page 4-38 where it is stated that "these diversions would be fatal to fish residing within the natural stream channels."

These proposed stream diversions are also an example of how specific restoration plans to return affected lands and waters to their former uses are not provided. The applicant's proposal (Appendix A, Part C) appears to concentrate on constructing stable stream channels but says nothing of their value as fish habitat.

(TAILINGS DISPOSAL/Wet Tailings Disposal Sites) "Surface flows across the tailings would be contained in a lined and ripped channel with overbank containment. All areas would be revegetated as required by the Forest Service (Knight and Piesold and SRK, Ltd., 1990)." Address any potential long-term water quality impacts due to failure of streambed liners, infiltration and seepage through the tailings pile, and flood potential in these rechanneled streams. A probable maximum flood and estimated average and peak flows through these channels should be provided. If severe flooding were to occur over the relatively flat tailings area before extensive revegetation occurs, the engineered channel structures may fail or need repair. High sedimentation rates could result. Long term monitoring requirements should be outlined.

(Conventional Tailings Disposal) "Tailings would be pumped as a slurry to a disposal site. Water used in the process would be treated and recycled to the extent possible, depending on the season and the amount of precipitation falling on the tailings pond. (Emphasis added). New Source Performance Standards for gold mines apply to this project (40 CFR 440.104). Section (2)(i) of these standards states:

In the event that the annual precipitation falling on the treatment facility and the drainage area exceeds the annual evaporation, a volume of water equal to the difference between annual precipitation falling on the treatment facility and the drainage area contributing surface runoff to the treatment facility and annual evaporation may be discharged ...

Provide details on how seasonal net precipitation figures will be derived over the project area. Provide information on the capacity of the tailings pond during low flow conditions and how annual net precipitation is allocated during a year's operations. The applicability of the net precipitation provision in the NSPS could be better described and related to project flow estimates.

117.82

Stream habitat and associated fish populations in Sherman and Sweeney creeks were intensively surveyed in summer 1991; these data are summarized in the FEIS (see Chapter 3).

117.83

The first priority would be to establish stable stream channels, as these would be important to protect water quality and fish production. Specific details of how these channels would be constructed are not necessary for the EIS; detailed engineering of stream channel components would occur in a future phase of the project. See also the response to Comment 111.12.

117.84

Comment noted. Please refer to Chapter 4, Surface Water Hydrology, Tailings Disposal.

117.85

Seasonal net precipitation figures have been derived for the project area by evaluating rainfall data from nearby weather stations. Monthly precipitation data was then adjusted to account for the elevation difference between the weather station and the mine site.

Annual precipitation is allocated on a monthly basis according to long-term records from the Eldred Rock weather station. This method of annual precipitation distribution provides for a statistically correct allocation of rainfall for the project water balance correlating monthly rainfall with monthly evaporation data.

A water budget summary is discussed in Chapter 4 of the FEIS. The budget addresses input and output from the various water supplies. Average values are discussed for:

- Slurry
- Direct precipitation
- Runoff outside the tailings beach
- Seepage recovery and runoff
- Treated camp/mill discharge
- Diversion leakage
- Recycled mill water
- Evaporation

All these factors affect the net precipitation discharge allowance, as discussed in the FEIS.

117.82

117.83

2-10

117.84

2-11

117.85

Kensington DEIS/Encl. 1	14	(Dewatered tailings disposal) Provide additional information on why the dewatered tailings option is not considered a suitable disposal technique for the Kensington project. Climate, moisture capacity of the tailings, mining method suitability and use of dewatered tailings for backfill should be described. State whether this technique has been used effectively at other gold mines in areas of high precipitation.	117.86	The dewatered tailings technique is discussed further in the FEIS. Specifically, issues such as moisture sensitivity, compaction, and historical success are addressed.
2-11	117.86	(HOUSING AND TRANSPORTATION/Slate Creek Cove) Further investigate the Slate Creek Cove terminal option with regards to: safety of offloading fuel and materials, potential impact to Berner's Bay in the event of spills, feasibility of joint use if the Jualin Mine is developed and whether high usage is recommended for the anticipated grade and construction techniques used for the approximately 8.5 miles of road, page 2-15 figure 2-12. Figure needs to be corrected to illustrate proper locations of existing communities and the project area.	117.87	The effects of locating project access in Slate Creek Cove are fully displayed in Chapter 4 of the DEIS. The Forest Service sent a reprint of Figure 2-12 to all holders of the DEIS on June 17, 1991. We have taken steps to assure that the FEIS does not repeat the printing error.
2-13	117.87	(WATER SUPPLY) "If required, a groundwater field would supplement surface water, water from the underground workings or other alternative sources." Provide information of the water supply estimates that indicate supplementary water sources may be needed. Pages 3-15 to 3-16 indicate that area groundwater is bicarbonate, sodium sulfate, with pH levels ranging from 6 - 9.9 and some elevated metals concentrations (iron and manganese). Please provide information on how these pH and metals levels will affect the use of this water in the milling process. Reduction of recharge to streams should be addressed.	117.88	Water supply estimates indicate supplementary water sources for makeup will be needed only during extreme low flows. If this situation develops, mine drainage or well field development could provide supplementary sources. Groundwater found in the Sherman Creek drainage is of sufficiently good quality for use as process water. Milling operations will require process water with a pH above the background range of 6 to 9.9 to prevent the formation of hydrogen cyanide gas. A bicarbonate, sodium sulfate water type describes a typical hard water characteristic that will not adversely affect the milling process. Concentrations of iron and manganese above the detection limits will also not adversely affect the milling process. The project is designed to maximize recycle and reuse of water. Chapter 4 of the FEIS discusses the hydraulic/water quality system within the tailings pond, and associated treatment needs.
2-16	117.88	(Table 2-2, Chemicals and Reagents) The term "muriatic acid", a commercial designation, should be replaced with "hydrochloric acid", which is more descriptive. Since large amounts of chlorine are to be used in the milling process, this additional source of chlorine should be underscored by using proper terminology.	117.89	Comment noted.
2-17	117.89	(WASTE DISPOSAL) "The policy of the Forest Service is not to allow disposal of solid waste landfills on National Forest System lands." Explain how this will affect the tailings and waste rock disposal sites. The State is aware of existing solid waste facilities on Forest Service land.	117.90	The DEIS contained too strong a statement on Forest Service solid waste policy. There is no policy on solid waste, only a general desire to limit use of Forest Service lands for solid waste disposal sites. Solid waste as referred to here means municipal, domestic and/or industrial household and other wastes normally landfilled. Tailings and waste rock do not fall under this classification.
2-18	117.91	(Sewage Disposal) Reference in this section to "greywater" is incorrect. Greywater does not include domestic sewage.	117.91	Comment noted.
2-22	117.92	(Off-site Ore Processing) Potential for off-site processing is adequately described, although an economic comparison might be useful.	117.92	The Kensington Venture has not supplied detailed commercial information to the Forest Service on this topic and it is not needed to evaluate the feasibility and impacts of the proposal.
2-25	117.93	(Backfilling of tailings) Backfilling of tailings to the mine	117.93	Comment noted.

stopes has been dismissed as an option because only 8-12% of the tailings could be accommodated due to the mining method employed, mine geometry, slow dewatering rate of the tailings, and scheduling limitations (page 2-26). The backfilling of only the flotation (cyanide-treated) tailings was not considered due to potential of acid mine drainage from the pyritic material. Mine safety is another reason cited in removing this option from consideration.

The State is not advocating backfilling of any tailings at this point in our review. The Final EIS, however, could better separate out environmental impacts (positive and negative) of backfilling treated or untreated tailings as opposed to considerations such as mining method and scheduling limitations that appear to be based on technical rather than environmental considerations.

(Echo Cove Terminal) A new boat launch and parking lot have just been completed at Echo Cove, and the facility is receiving increased levels of use. An analysis of this growing public use should be done prior to siting a major marine terminal in Echo Cove.

(Comet Beach Terminal and Daily Ferry Commute) A Kensington Venture study on wave conditions in Lynn Canal and landings at Comet Beach is cited but not referenced in this section.

(ALTERNATIVE A - NO ACTION) "This alternative would serve as baseline for estimating the effects of other options (40 CFR 1502.14)" A strict reading of 40 CFR 1502.14 does not indicate that the No Action Alternative should serve as baseline. Although historic mining and logging at the site does not render the affected lands "pristine", the presented No Action Alternative, with 15 acres of disturbance, does not adequately define baseline conditions. Baseline on water quality, for instance, may better be represented by an adjacent watershed, such as Sweeny Creek, as a measure of pre-development water quality during operations and at closure. Use of the existing exploration site as the No Action Alternative assumes, in part, that the Sherman and Ophir Creek drainages of the Preferred Alternative are the measure of environmental baseline.

(ALTERNATIVE B - APPLICANT PROPOSAL) The table on surface area disturbance does not indicate acreage for fuel storage and laydown area. Alternatives C, D and E indicate 6, 3, and 3 acres will be needed, respectively. Explain this discrepancy.

(ALTERNATIVE B COMPONENTS) The figure and text do not indicate sediment control points on site, paved areas, or runoff collection. Provide information on how the two sedimentation

117.94

There are no facilities planned for Echo Cove under any alternative. This was an option which was evaluated and eliminated.

117.95

Thank you for noting the oversight. The study, entitled Transportation Alternatives for the Kensington Mine, was conducted by Peratovich, Nottingham & Drage, Inc. (PN&D, 1989). This reference has been included in the FEIS.

117.96

Analysis of the No Action Alternative "provides a benchmark, enabling decision makers to compare the magnitude of environmental effects of the action alternatives." (46 FR 18026) Thus, the DEIS should have used the word benchmark instead of baseline. This has been corrected in the FEIS.

On the subject of what defines baseline conditions at the site, CEQ regulations at 40 CFR 1502.15 state only that "the environmental impact statement shall succinctly describe the environment of the area(s) to be affected." This definition does not impose any obligation to artificially construct a pristine environment (untouched by humans) at the site prior to completing NEPA analysis. Attempts to describe the affected environment in terms other than as it exists at the time of the analysis could lead to preposterous results.

Attempts to use the water quality data from another basin such as Sweeny Creek to describe baseline in Sherman Creek would be similarly flawed. The information available from Sweeny Creek can provide comparative analyses, and as time passes, Sweeny Creek data can be considered control information (assuming there is not significant disturbance there). These uses of Sweeny Creek data are very important to the long term observations of project impacts, but they represent the limit of how far the information can be extrapolated.

117.97

Disturbances under the various alternatives were catalogued under general headings that best described the activity groupings of that alternative. In Alternative B, the fuel storage and laydown areas are an integral component of the marine terminal area and are included in that disturbance acreage. In the other action alternatives the fuel storage and laydown areas are separate from other disturbance areas, therefore, designated separately. All facilities have been accounted for in estimating disturbance under each alternative.

117.98

The sedimentation ponds will cease to function when the tailings pond reaches its final elevation. Site runoff will be directed into the tailings pond.

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117.98		ponds function when the maximum tailings pond elevation has been reached. This is of concern based on runoff control problems encountered at the Greens Creek mine.	117.99 The Forest Service believes the objectives are attainable through implementation of the measures listed in this section. The Kensington Venture will be responsible for funding the mitigation measures listed in this section.
2-41		(MANAGEMENT, MITIGATION AND MONITORING) The lists of monitoring objectives, mitigation measures and issues on pages 2-42 and 2-43 need to be related to specific project features and activities and their projected effects upon specific habitats as part of a discussion of the feasibility and desirability of specific alternatives. Are these objectives obtainable, who will pay for them and how much will they cost?	
117.100		Under what conditions would the project be shut down in the event that permit conditions are exceeded or not observed?	
2-41		The management/mitigation tools needed to protect the environment and wild resources should include a "Stop Work Clause." Such a clause would go into effect immediately when a permitted level was exceeded (for example) and would end when the situation was corrected.	
117.101		(MANAGEMENT, MITIGATION AND MONITORING) "If the No Action Alternative is selected, management, mitigation and monitoring would not be required." Emphasize that mitigation and reclamation will be necessary for existing impacts from the exploration program at the site.	117.100 Chapter 2 of the FEIS has been expanded to further address management and mitigation objectives.
117.102		"The Alaska Region Soil and Water Conservation Handbook ... would be the framework used to develop site specific [Best Management Practices] for the Kensington Project." Best Management Practices (BMPs) are also a significant requirement of the EPA NPDES permit (per 40 CFR 125.104). Detail the best management practices required by the federal agencies and explain their overlap. Pages 2-42 and 2-43 are helpful in this regard. One example of a BMP listed on page 2-43 is: Implement additional wastewater treatment if unanticipated water quality problems occur. It can be argued that additional wastewater treatment might be a BMP prior to the occurrence of water quality problems.	117.101 The FEIS has been revised to reflect your comment.
2-42		(MANAGEMENT, MITIGATION, AND MONITORING) Effluent and receiving water monitoring should be added to the list of water quality monitoring objectives.	117.102 Please see response no. 117.2.
117.104		(Water Monitoring Objectives - 2nd bullet item in list) Monitoring wells would be required for areas such as the described waste rock storage facilities in the solid waste permits (see cover letter).	117.103 The FEIS has been revised per your suggestion.
2-43		(Reclamation) State in discussion on reclamation issues that the Kensington project must conform to the State of Alaska Reclamation Act and Reclamation Regulations.	117.104 The FEIS has been revised per your suggestion.
117.105			117.105 The FEIS has been revised per your suggestion

Kensington DEIS/Encl. 1	17	A discussion of the long term effects of the proposed actions must include more information on reclamation. We are concerned that reclamation plans should restore the values of affected lands and waters as productive fish and wildlife habitats, not merely provide for revegetation or stabilization. Can examples of stream channel reconstruction through tailings (as proposed for upper Sherman Creek) be provided?	117.106	117.106 Additional information regarding reclamation, and in particular reclamation of stream channels across the tailings impoundment, are provided in the FEIS.
	2-46	(Interim Shutdown Measures) "During operations, the Kensington Project may experience temporary shutdowns or periods when operations are curtailed." Although economic reasons are given in the text as possible causes for temporary or permanent shutdown (such as metals prices and labor costs), failure of environmental protection measures or environmental accidents also constitute legitimate reason for shutdown and should be added to this list.	117.107	117.107 The list is not intended to be exhaustive. There are a multitude of factors which could result in temporary shutdown including but not limited to economic and/or environmental conditions.
	2-46	(Reclamation, Management and Monitoring) Environmental monitoring of the tailings impoundment, Sherman Creek below the tailings dam, selected surface and ground water monitoring sites, and sediment sites near the outfall should be included in the reclamation plan and should be mentioned in this section.	117.108	117.108 Monitoring of water quality and stability of the tailings impoundment as outlined on DEIS pages 2-42 and 2-43 would continue through the reclamation phases until the Forest Service and other applicable agencies determine that these resources have been adequately protected by successful reclamation.
	2-47	(Employee Camp) Helicopter use in the area is likely to cause abandonment of a large portion of the preferred mountain goat habitat in the Lion's Head Mountain area. While it is always technically possible to "reduce" disturbance to wildlife by altering helicopter flight paths, this does not minimize disturbance. This portion of the discussion should recognize that alternatives featuring helicopter transport of employees are most likely to cause habitat abandonment by local wildlife, particularly mountain goats, and that there is very little that can be done to avoid those impacts. Mention that mountain goat habitats will be affected on the route between the Juneau Airport and Berner's Bay. Habitat Capability mapping of mountain goat habitats should be used to evaluate potential wildlife disturbance over the entire route of proposed helicopter travel.	117.109	117.109 The DEIS has taken into account the effects of helicopter use and other noise sources on projected impacts to mountain goats. These projections do indicate loss of habitat as a direct result of noise avoidance (see DEIS page 4-48, DEIS). Preliminary results of ADF&G monitoring studies of radio-collared mountain goats in the Kensington study area indicate that mountain goats did not use potentially high quality winter range above the mine site but that displacement may not be as great as projected by the HSI models. There is no evidence to indicate total abandonment of the Lion's Head area. Further monitoring will be required to validate these initial findings.
	2-48	(IDENTIFICATION OF THE PREFERRED ALTERNATIVE) Several components of the applicant's proposal were modified for the Forest Service preferred alternative, including: underground grinding, riprap channel to return flows to Sherman Creek, and locating generators at Comet Beach. The applicant has indicated that, instead of these modifications, mitigation of the impacts caused by the original designs will be offered. Explain how the applicant's request will be considered under the National Environmental Policy Act (NEPA) process.	117.110	Additional discussion regarding the differences in disturbance to mountain goats related to transportation alternatives and the proposed helicopter transportation corridor have been added to the FEIS.
	2-48	The Forest Service has made three major changes to the		117.110 The FEIS evaluates the mitigation proposed by the applicant as well as other suggestions. The Forest Service will use this evaluation as part of its final selection of preferred alternative.

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applicants preferred alternative. Underground grinding and relocating the power plant from the mill/camp area to a site near Comet Beach were added to mitigate noise. The applicant may be able to meet or better noise criteria through the use of rubber lined ball and SAG mills, sound insulation in the building and berming around the mill building the mill. Similar design parameters can also be utilized at the power plant. Also, relocating the powerplant to Comet Beach precludes the useful utilization of waste heat from the facility, thereby requiring additional fuel to be consumed to meet camp and plant heating requirements. Compare and evaluate these.

117.111

The key issues surrounding the diversion channel are: the ability to meet instream flow requirements, water quality parameters, reclamation, habitat restoration, and availability of a local source for riprap grade rock. The discussion of the alternatives should focus on these issues.

117.112

2-49

(Comparison of Alternatives) Impacts of the discharge of tailings pond effluent into Lynn Canal were identified as a major scoping issue. No alternatives for pipeline or outfall locations discussed. Address alternatives.

117.113

CHAPTER THREE - AFFECTED ENVIRONMENT

Biological baseline information on the affected environment is generally lacking or incomplete. The following documents (Attachments 3 and 4) have raised this issue:

1. ADFG review comments: "Baseline Wildlife Studies, Kensington Mine" (letter to Ken Mitchell, U.S. Forest Service, December 18, 1990)
2. ADFG review comments: "Kensington Freshwater and Marine Biological Baseline Studies (letter to Rich Richins, Kensington Project, January 17, 1991)

117.114

In addition, Forest Staff prepared a "Baseline, Monitoring and Reclamation Needs Assessment" which is included as Attachment 5. This "Needs Assessment" includes freshwater and marine fisheries habitat evaluations which we feel are essential to answering public concerns expressed during the scoping process.

The Draft EIS is not based on sufficient information to provide for minimum instream flows to protect fish habitats, does not contain information on the use of nearshore habitats by outmigrant juvenile salmonid fishes, and cannot evaluate effects of proposed stream diversions because habitat mapping for these reaches is unavailable or incomplete. However, this information is being collected by Kensington Venture

117.115

117.111

Please see response no. 117.110.

117.112

Comment noted.

117.113

Please see the FEIS for a discussion of alternative outfall locations.

117.114

Please see responses no. 5.2, 98.8, 99.29 and 111.12.

117.115

Data collected in 1991 has been incorporated into the FEIS.

117.115	contractors. Temperature and stream flow gauges were installed in Sherman and Sweeney Creeks in May 1991, and an outmigrant salmonid migration study in the vicinity of Point Sherman was also conducted in May 1991. Stream habitat mapping surveys are planned in the near future. This information should be included in the EIS.
3-3 117.116	(GEOLOGY) Provide references for the information in this section, especially relating to sulfide content of the ore.
3-5	(GEOTECHNICAL CONSIDERATIONS) The State defers comment on earthquake potential in the area to the Department of Natural Resources during its dam safety engineering review. The concept of ground acceleration as a measure of dam stability versus quake magnitude should be better described. Dam failure and subsequent accidental release of mine tailings has generated considerable interest during the comment period.
117.117	
3-6 117.118	(Figure 3-5, Earthquake Damage Potential) The figure shows a designation for Zone 4 (major damage) in the legend, but does not show it on the map.
3-10	(Sherman Creek Watershed) Para. 1 regarding stream flow monitoring periods leaves uncertain whether, for instance, winter low flows of '89 were measured. (Gold Creek near Juneau had extended low flows during this period.) This information might better be presented as a table allowing all monitored periods to be specified.
117.119	
3-11	(SURFACE WATER QUALITY/Sherman Creek) "Surface water quality data for the Sherman Creek drainage were obtained from four monitoring stations." Since Station 104 was later moved and the number changed to Station 109, only two baseline locations were actually used to derive the surface water quality estimates presented in Table D2-3. Any implications of the non-continuous use of Station 104 on the surface water quality projections, and reasons for the Station's relocation, should be given.
117.120	
117.121	"Elevated concentrations of nitrates were noticed in the Kensington Project area surface streams and ground water during the monitoring period beginning the summer of 1988." Further description is given of the possibility of high nitrate readings resulting from unexploded ammonium nitrate explosives (ANFO). ADEC and the Forest Service hydrologist determined that the elevated cyanide readings obtained at that time were due to positive interferences with the cyanide analysis procedure. Provide further description of the effects of high natural or induced nitrate concentrations on the compliance detection limits and permit limitations of cyanide (total, WAD and free).
117.116	the Kensington Venture has provided information on geochemical characterization of the ore.
117.117	The State of Alaska, Dam Safety Division has commissioned an independent review of the dam design which has included a detailed analysis of the seismic design parameters. Input from this review will be incorporated into the final dam design.
117.118	Earthquake Damage Potential Zone 4 has been added to Figure 3-5.
117.119	Additional low flow data is presented in Chapter 3, Surface Water Hydrology, Description of Watersheds.
117.120	Station no. 104 was moved down stream approximately 900 feet to a more stable stream section with a better hydraulic cross section and less bed load movement. It was felt that the new station, no. 109, would show less effect from changes in stream geometry than station no. 104.
117.121	Please see responses to comment Nos. 93.24, 93.25, and Chapter 3, Surface Water Hydrology, Surface Water Quality.

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The elevated nitrate concentrations in Ophir Creek, described above, were observed during the winter months (February 1988, and December, 1988; October, 1989 to February, 1990) according to data received by ADEC. This must be considered when these results are used as baseline data. For instance, summer data should not be compared to winter baseline data.

An additional sampling station, Station 110, was added to Upper Ophir Creek in support of ADEC wastewater disposal permit 9111-DB003. This upstream sample serves as the unaffected upstream measurement for compliance. This sampling station should be noted on Table D2-1.

(OCEANOGRAPHY/General Circulation Patterns) "The resulting circulation is sufficient for continuous, at least frequent, flushing of the canal (McLain, 1969). A flushing rate for Lynn Canal of approximately 54-60 days has been estimated by RESCAN consultants. The use of the older McLain reference and not the more recent estimates by RESCAN is puzzling. The EIS should better define flushing rate in the Canal as this is a key concern of local users of the Canal with personal experience of its tides and currents.

(Aquatic Resources) It would be useful if the EIS could relate the data presented in relation to how many species of fish or other organisms could be affected by the discharge. A very general statement would be adequate but would put the potential effect from the discharge in perspective.

(Figure 3-15) What engineering work has been done to insure that the proposed outfall pipe and diffuser are properly supported, or that the proposed alignment is feasible?

Figure 3-15 shows a precipitous change in depths from the shore into deeper water. What is the risk of submarine "landslides" or other geophysical hazards (ie. winter storms) to the integrity of the pipeline?

What types of habitat are present along the pipeline route and at the proposed diffuser location? Will the pipeline be buried in the intertidal zone?

How could a pipeline break or leak be detected or repaired underwater? Would such repairs be possible at most times of the year?

In meetings with a committee from "The Alliance For Juneau's Future" gillnetters expressed concern that the anchorage area at Point Sherman might not be usable or that a dragging anchor could cause a pipeline break if the current proposal is adopted. The alternative of piping the effluent and discharging it south of Point Sherman should be investigated.

117.122

The FEIS has not repeated the extensive data tabulation found in Appendix D of the DEIS. The data has been used in evaluating project impacts. Copies of baseline data are available for review in the EIS planning record at the Juneau Ranger District.

117.123

Refer to Chapter 4 of the FEIS which presents an expanded discussion of the wastewater submarine discharge and to the support document Kessler and Vigers (1992) for a more complete discussion.

117.124

This matter is clarified in the FEIS (see Chapter 4).

117.125

Outfall construction would be difficult in the surf zone and out to a depth of 30 to 50 feet where wave induced velocities would be low enough to have minimal scour. In shallow water (less than 30 to 50 foot depth) the wave induced velocities would be enough to move the largest available rip-rap. Pipe installation in that zone would have to be buried and adequately protected.

This can be accomplished using a blasted trench with concrete pipe encasement, a bored pipe route through the critical zones, or a combination of these techniques.

Below the critical velocity zone, the pipe can be installed using more standard methods such as weighted pipe laid on the bottom. Measures to limit anchor damage would be necessary. High density polyethylene pipe would likely be used. This pipe can be used in either of the installation options currently being considered.

To verify the pipe route and some of the possible installation issues, sampling programs and observation dives have been made by Dames and Moore and the Oregon Institute of Oceanography. The divers noted that the bottom near shore is typically rocky and well scoured, there are numerous off-shore benches that have well scoured sand deposits that appear to move with wave action (i.e., significant ripples in the sand deposits) and the bottom appears to be rock with thin sand deposits on some of the benches.

No unexpected formations were noted during tests or observations. The proposed alternatives for outfall installation should not be limited by the bottom conditions noted. The primary factor controlling outfall installation will be the wave forces in the shallower waters and potential anchor damage in deeper water. The final alignment would be surveyed to verify conditions prior to installation.

117.126

A horizontal scale has been added to the figure in the FEIS to better present the fact that the average gradient along the proposed outfall alignment is about 19 percent. See also response no. 99.9.

117.127

Precise alignments for the two alternative discharge sites have not been determined. Such precision is not considered necessary to assess impacts. It is unlikely that unique habitat would be located precisely on the pipeline alignment requiring a greater level of resolution in impact analysis than is being done.

The pipeline would be buried in the intertidal zone.

117.128

The underwater portion of the pipeline and diffuser would be monitored by a manometer/alarm system. Problem situations would be detected by pressure losses. Repair of any break/leak could be effected in-place underwater at any time of the year, depending on the wind/weather in Lynn Canal.

Outfall pipeline leaks or breaks could be easily detected by standard SCUBA dive observation down to a depth of 100 to 130 feet. For deeper installations, more technical gas diving or Remote Operated Vehicle (ROV) observations would be necessary. ROV's are typically not available in Juneau and lease for over \$4000 per day with support vessel and crew out of Seattle.

Once observed, leaks above the 100 to 130 foot depth would be repaired. Divers would band clamp small leaks. Pipe break repair would most likely require a ship with heavy winch or crane capability to move the pipe ends and possibly lower sections of pipe to replace damaged pipe.

The NPDES Permit will incorporate a detailed Operation and Maintenance Plan. Monitoring activities such as video surveys, diving inspections, etc. will be described in detail in this plan.

117.129

Please see the FEIS for a discussion of alternative discharge locations.

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3-19 (Chemical Characterization of Water Quality) The sediment sampling described in the referenced Tables D3-3 and D3-4 may not be near enough to the permitted outfall to serve as baseline. Provide a brief analysis of the previous data as to significant background concentrations as well as describe any proposed sediment sampling program once the outfall is permitted.

(Crab and Shrimp) The data collected may not be sufficient to be representative of the actual crab and shrimp populations. Crab and shrimp pots were set out only during one season, using a limited number of pots and keeping them in the water for only a relatively short time. Only one overnight set was done. Additional pots should be set for longer times, during other seasons and using more crab and shrimp pots.

Coonstripe shrimp will be used for the NPDES bioassay tests and information about this species in the project area would be useful.

We need to know if there are seasonal differences in abundance, are there on-shore/off-shore migrations, when are planktonic larva in abundance, how do marine currents and depth/salinity profiles affect their distribution, is there a nursery area, what role Berners Bay plays in their life cycles, etc. Additional surveys should be conducted in possible locations for the marine pipeline and outfall.

(Other Project Area Species, third column) Considering their location and ecological differences, the inference that data on larval fishes found in Auke Bay are representative of the species composition and time of occurrence of those found in the project area, may not be appropriate. Independent studies of the project area are needed to verify such an assumption.

(third column, last paragraph) This old reference is not relevant. Pollock were over-abundant in Lynn Canal in the early to mid-1970s. Their populations crashed in the late 1970s and have been at a low ebb since. There have been other local species composition changes during the last twenty years as well, e.g., an increase in salmon abundance, a decrease in herring, true cod, and tanner crab abundance, etc. Also, eulachon is a species of smelt.

(first column, first paragraph) Anadromous species should include eulachon (*Thaleichthys pacificus*). This anadromous species is abundant in the area during the month of May and is extremely important to the local natives and wildlife during that time. Major spawning systems include the Chilkat, Chilkoot, and Berners Rivers.

(last paragraph) The salmon species passing through Lynn

117.130

The scaling legends shown on Figures 2-2, 2-3 and 2-4 of the report entitled Kensington Project: Lynn Canal Oceanographic Data Report (Rescan 1990), are incorrect. For example, the Figure 2-2 legend should range from 0 to 5 kilometers and not 0 to 50 as shown. This factor of 10 error is largely responsible for the reviewer's concerns about sparsely and distantly located baseline sampling stations.

Sediment traps designed to measure the naturally occurring particle deposition rate were deployed for two months at a time at three depths and three locations off Pt. Sherman between September 1988 and April 1989 (see Rescan, 1990). The settled material recovered from these traps was analyzed by Analytical Services Laboratory in Vancouver, B.C. for dry weight, volatile and non-volatile fractions and heavy metal concentrations.

Traps located near the bottom (i.e., >280 m depth) typically recorded particle flow rates five times higher than at shallower depths. The proximity of these deep traps to the bottom suggests a contribution by sediment resuspension. The mean annual calculated TSS deposition rate in Lynn Canal is between 278 and 2,030 gm/m², with a best professional judgement estimate of 897 gm/m² (Kessler and Vigers, 1992).

Sediment will be monitored as a requirement of the NPDES permit (see Appendix D). Sampling would involve sediment traps in the area of the outfall, bottom sediment chemistry in this same area and TSS in the tailings impoundment. The number of sampling stations, frequency, and other components of the program will be determined once the final outfall location is selected.

117.131

Please see response no. 5.2.

117.132

Please see response no. 5.2.

117.133

Please see response no. 5.2.

117.134

Please see response no. 5.2.

117.135

Eulachon has been added to the species list.

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117.136	Comment noted.	117.136	Canal are, in order of magnitude, sockeye, chum, pink, coho, and chinook.
117.137	Comment noted.	117.137	(second paragraph) There has been a considerable number of coded wired tagged (CWT) chinook that have been harvested and reported in recent years. Although these fish are of mixed stock origin, the majority of CWT chinook harvested in Lynn Canal have been Chilkat River system and Alaska hatchery origin. Chilkat River chinook are known to rear almost exclusively in the inside marine waters of northern southeast Alaska.
117.138	Additional material is included in the FEIS on this matter. See also response no. 99.29.	117.138	(Juvenile Use of Marine Habitats) This section provides a discussion of the nearshore movements of outmigrant salmon fry and smolts, and should address the public concern that these juvenile salmonids may mill and feed in the Point Sherman area in the proposed mixing zone for tailings pond effluent discharge.
117.139	Please see response no. 5.2.	117.139	(third column) Literature references regarding juvenile salmonid behavior in Chatham Strait and lower Lynn Canal may not be relevant to the project area. In any case, such studies fall short of answering the questions posed above concerning biological studies (see page 5-6 comment) and Berners River stocks.
117.140	Given that no significant impacts are projected on prey organisms of young salmon, such studies are unnecessary. See response no. 5.2 for a further discussion on this level of detail.	117.140	What prey species are available to the young salmon, of those available which they prefer, and what role Berners Bay plays in their life cycles also must be determined.
117.141		117.141	(third column, second to last paragraph) There seems to be some confusion re the ages of sockeye smolts expressed as years, and winter checks (annuli). Sockeye smolts leaving Chilkoot and Chilkat Lakes are typically two to three-year-old fish which possess one to two winter checks.
117.142	The comment is one of semantics. There are several different systems on referring to age from winter checks. Dr. R.E. Foerster discusses these differences in his book <i>The Sockeye Salmon, <i>Oncorhynchus nerka</i></i> , where he points out how certain institutions have their own preferences for aging terminology. Under the system used by the individual making this comment, a fish that emigrates shortly after emergence (i.e., as a fry) would be considered a one year old fish. This fish would not have a winter check on its scales. By the terminology adopted in the EIS, a fry emigrant would be an age-0 fish; a fish migrating after overwintering for one winter would be an age-1 fish or a yearling (though the fish would be in its second year of life). Chilkat and Chilkoot sockeye typically emigrate as age-1 and age-2 fish.	117.142	(third column, last paragraph) Chilkat and Chilkoot Lakes are believed to provide the most important overwintering areas for Dolly Varden in Lynn Canal. Dolly Varden overwintering at Chilkat Lake are known to migrate past Pt. Sherman to the Juneau, Hoonah, and Gustavus areas.
117.142	Comment noted.	117.142	³ Palhke, K.A., Mecum, R. Marshall. 1990. Migratory Patterns and Fishery Contributions of Chilkat River Chinook Salmon. Ak. Dept. Fish and Game, Fishery Data Series No. 90-50, 32p.
			⁴ Erickson, R.P., A.Schmidt and R. Marshall. 1990. Northern Southeast Alaska Dolly Varden Research and Creel Surveys in Haines and Sitka, 1988-1989. Ak. Dept. Fish and Game, Fishery Data Series No. 90-46. 30p.

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3-25 (Adult Migrations Through The Project Area, second paragraph)
 Chinook salmon return between mid-May through July, not mid-June through July.

117.143

3-27 (Sherman Creek, Column 3) The Kensington Venture will begin five additional studies of these drainages during the 1991 field season:

117.144

Aquatic Habitat Characteristics
 Freshwater Habitat Use by Juvenile Salmonids
 Stream Diversion Impacts to Resident Fish/Fish Habitat
 Spawning Migrations of Adult Salmon
 Benthic Macroinvertebrates

In contrast, the Draft EIS relies upon Buell's 1990 work which we found to be insufficient to describe these stream habitats or to predict the impacts of specific features of the proposed mining plan (see attachment 4). Include the results of the 1991 studies.

3-27

117.145

(Sherman Creek, para. 1) The watershed area stated as 3.8 sq. mi. is incorrect; it is 4.01 sq. mi. at the mouth. The 3.8 sq. mi. figure should be used only with reference to the gage location in use during the period of record 1914-1916.

3-28

117.146

(Sweeney Creek) The mainstem of the middle reach of Sweeney Creek is characterized as A3 type, which is not a type from the classification key in Table 3-8. (Possibly a typo for A2?)

3-30

117.147

(Habitat Capability - Sherman and Sweeney Creeks) "Results of habitat modeling for Sherman Creek predict that the highest fish production potential in the drainage per unit surface area occurs upstream from the proposed tailings impoundment." This is precisely the same portion of the drainage that will be diverted and or placed in a pipeline.

117.148

"The Sweeney Creek drainage appears to be capable of supporting fish production far into the headwaters, and as such, may offer good potential for habitat enhancement as a means of mitigation." Clarify the enhancement on Sweeney Creek if the Sherman Creek drainage is used for tailings disposal. ADEC water quality standards are designed to protect aquatic life in these creeks.

3-31

117.149

(Intertidal and Subtidal Communities) Information is provided on populations but no estimates are given on the fish and bottom fish densities within the receiving waters near the proposed outfall. This information is needed for long-term biological monitoring and possible effects from the effluent.

117.143

The statement was based on the average catch patterns that have occurred in the gillnet fishery and did not consider the earlier pattern of when fish actually begin to enter the area. This is corrected in the FEIS.

117.144

Results of the marine and freshwater studies carried out in 1991 are included in the FEIS (see Chapter 3).

117.145

The watershed area has been changed in the FEIS.

117.146

As you suggest the classification in the DEIS was a typographical error. It has been corrected in the FEIS. Since the DEIS was printed a debris torrent has again altered the habitat in lower Sweeney Creek.

117.147

The comment is accurate. It is important to note the context of the statement, however, since it refers to the relative production capabilities of the different stream reaches. The model predicted that areas upstream of the anadromous barrier have a greater potential for in-stream fish production than areas downstream, but it has limitations in predicting production capability in an absolute sense. The model incorporated input data developed primarily from anadromous stream reaches and was thought likely to overpredict production in reaches above anadromous barriers, as noted in the first paragraph of column three on page 3-30 of the DEIS.

The FEIS includes fish inventory data collected in 1991 in Sherman Creek. In a relative manner, results of the inventory were approximately the same as those predicted by the model as given in the DEIS. However, observed densities of Dolly Varden were significantly less than those predicted by the model, as shown in Chapter 3 of the FEIS.

117.148

If it is determined that mitigation is needed to replace fish production lost in Sherman Creek, then Sweeney Creek appears to offer such potential. Such mitigation would be provided through habitat improvement measures in Sweeney Creek by either expanding anadromous utilization of the drainage or by improving the production capability of various stream reaches.

Sweeney Creek appears to be extremely dynamic and unstable, as attested to by the wholesale habitat changes that occurred in September 1991 as a result of successive storm events. Several slides occurred in the drainage, resulting in major alterations to fish habitat. Those types of events can devastate resident fish populations. Such conditions offer significant opportunity for improving fish production by placement of structures to stabilize the stream bed or to provide refuges for stream residents.

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(VEGETATION) The description of historic mining and logging on the Kensington site indicates "minor (in terms of relative acreage) alterations of existing vegetation." The Draft EIS states that second growth timber comprises about 983 acres of the study area. It would appear that much information on the success of the Venture's proposed reclamation and revegetation could be gained from additional study of these historic disturbed sites.

(WETLANDS MAPPING) The use of the Tongass Wetland Mapping as opposed to the Federal Interagency Committee for Wetland Delineation (1989) guidelines, and its approval by the Corps, is noted as a good approach for the project area. Clarify whether the Corps itself will be consistent with these wetland designations for the dredging and filling described in the 404 permit.

(MARINE MAMMALS, third column) Note that there is a seal haulout on Little Island, and a sea lion haulout on the west side of Benjamin Island. There are also seal haulouts on the northern end of Sullivan Island and Kataguni Island, and a sea lion rookery is located on the western shore of Lynn Canal approximately two miles north of Yeldalgaiga Creek.

(Nonresident Recreation) Mention the large number of Canadians which travel to Haines to go sport fishing. Approximately 60% of the roadside anglers, and 40% of the marine anglers in Haines are Canadians. A number of these fishermen will motor down to Sullivan Island and the adjacent area of the Kensington Mine to fish for halibut.

(Resident Recreation) Haines sportfishermen and hunters also utilize the area adjacent to the Kensington Mine.

(Recreation) Provide a discussion to serve as a basis for relating present local fishing and hunting opportunities to increased demand and decreased opportunities that newcomers may place upon these resources.

(CITY OF SKAGWAY/Solid Waste Disposal) Skagway now has an ADEC permitted solid waste facility.

FOUR - ENVIRONMENTAL CONSEQUENCES

(GEOTECHNICAL CONSIDERATIONS) "In areas where pipeline construction cannot avoid potential rock fall areas, the pipeline would be armored or protected in some similar manner to minimize the potential for rupture and accidental spills." Give further details on spill and rupture prevention on the effluent and process pipelines, including alarm or other warning devices on land-based process water and effluent pipelines, as well as marine segments of the effluent

117.149

See response to Comment 5.2. The densities of pelagic and demersal fishes normally exhibit significant fluctuations within and between seasons. Such changes are not uncommon within fairly localized geographic areas, as well as for entire populations. The variability demonstrated by fish populations is well documented; for example, for Pacific herring (Skud, 1970), for Pacific halibut (Bell, 1970; Pearse, 1982), for Pacific salmon (Larkin and Hourston, 1964; Lichatowich and Cramer, 1979), for bottom fish in general (Alverson et al., 1964) and for fish stocks in general (Gauldie, 1991). These citations represent only a very small fraction of the available evidence for fluctuations in the abundance of fish populations. In planning studies to evaluate the effects of environmental changes, biologists sometimes ignore the complexities associated with population variability (Lichatowich and Cramer, 1979). Measurements of abundance for a few years provide an inadequate basis to assess environmental effects with a significant degree of statistical power.

Rather than pursuing a rigorous assessment of fish densities in the vicinity of the outfall, the assessment of likely impacts was based on projecting exposures to potentially toxic substances. The analysis incorporated projections of concentrations of these substances and the life history characteristics of fish known to utilize Lynn Canal.

117.150

As indicated on pg 3-34 in the DEIS, site-specific wetland mapping of potential disturbance sites was conducted using the procedures outlined in the *Federal Manual for Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation, 1989). At the time of this mapping effort, these procedures were required by the Corps of Engineers for wetland delineations for 404 permitting. Results of this mapping effort were approved by the Corps of Engineers.

The use of the Tongass Wetland Mapping is not applicable for 404 permitting and was provided in the DEIS only to compare wetland impacts with respect to the various action alternatives being considered. The 404 permitting process will be based upon site-specific wetlands mapping conducted in accordance with the procedures currently accepted by the Corps of Engineers. A discussion of the differences between the Tongass Wetland Mapping and the jurisdictional wetland mapping is provided on DEIS page 3-34.

117.151

Thank you for the additional information regarding sea lion haulouts and rookeries. The discussion of this species has been updated in the FEIS and the Biological Assessment.

117.152

The FEIS has been modified to reflect your suggestion.

117.153

Comment noted

pipeline.

4-8

117.157

(Worst case Analysis - Dam Failure) Although centerline construction techniques have been demonstrated to be stable under high seismic loads, explain how the proposed modified centerline construction deviated from this design and why it was chosen in this application.

4-13

117.158

(Water Supply) Does Sherman Creek have to be used to supply any of the mill or domestic water needs of the mine? It appears that the underground mine "could produce an estimated 1000 gpm." Give the source of this amount. Information provided by the applicant estimate 800 gpm during peak flow. We are concerned that adequate minimum flows be maintained to protect fish habitat values and we will work with the Forest Service to determine specific amounts of water that will be needed during low flow periods.

4-13

117.159

(SURFACE WATER HYDROLOGY - Sedimentation) Erosion control practices proposed by the applicant include gravel on all travel areas. Indicate whether the available gravel resources on site are adequate for this usage as well as for tailings dam and other construction.

4-14

117.160

(Sedimentation) "Runoff from the mine site area would also be routed to the tailings impoundment or to a special pond for treatment by settling."

(Mill and Tailings Pond Effluent Characteristics) "If necessary, additional treatment would be implemented to reduce cyanide levels in tailings pond effluent prior to discharge in order to meet NPDES requirements."

Combine these and other statements about the possibility of additional treatment (see page 2-8) into a single section so that treatment options are more clearly laid out. Additional flocculation has also been mentioned by the applicant. Any tradeoffs in providing the additional treatment (such as increased site disturbance) should be outlined. Present treatment possibilities and cost/benefit assessments.

Information on the maintenance plans for settling ponds would be helpful. The Greens Creek mine has had difficulties with rapid infilling of their ponds that has required periodic maintenance, which have resulted in impacts to water quality when the ponds are not in operation.

4-14

117.161

(Sewage Disposal) "Treated effluent would then be routed to either the tailings pond or directly to the marine outfall." Clarify which waste streams would go directly to the marine outfall. The relation between domestic waste, the tailings outfall and the required permits is unclear.

117.154

The impacts to recreation opportunities are presented in Chapter 4 of the DEIS.

117.155

The FEIS has been modified to incorporate this new information.

117.156

Pipeline protection measures will be final design modifications that respond to alignment specific conditions. It is not known at this time whether such measures will be needed.

117.157

The current dam design (modified centerline construction) has undergone stability analysis by the State of Alaska, Dam Safety Engineer, the U.S. Forest Service, Dams and Hydraulic Engineer and Geotechnical Engineer, and the dam designer (Knight and Piesold).

The modified centerline construction was chosen to optimize the use of waste rock for construction, thereby reducing surface disturbances. This design also satisfies existing state-of-the-practice and state-of-the-art seismic design requirements as discussed in responses 87.6, 93.34, and 100.18

117.158

Sherman Creek will be used for domestic and process needs. Should sufficient water be available from the mine then process make-up would be derived from that source. At this time, 400 - 600 gpm of mine drainage are being discharged from the mine. The FEIS estimated a range of 500 - 1,000 gpm. Experience at the mine shows that mine water discharge has increased proportionately with expanded exploration development. See also responses no. 117.25 and 117.88.

117.159

Erosion from road surfaces at the project will be minimized by placing gravel on all travel areas. Gravel (crushed mine waste rock) will be generated on-site by crushing waste rock to the appropriate size. Sufficient waste rock exists, in conjunction with borrow material, to construct the tailings embankment, facility foundations and provide gravel for road surfacing. If necessary, quarry rock sources are available within the boundaries of the disturbance.

Geotechnical investigations by Dames & Moore (1990) and Knight & Piesold (1991) indicate that sufficient gravel sources with effective strength parameters are available onsite to meet projected road construction needs. However, the majority of gravel to be used in road and tailings embankment construction would be crushed waste rock from the mine, as described above. This is the present road surface. The material is very durable and produces insignificant fines during normal or high precipitation use periods.

Kensington DEIS/Encl. 1 4-14	26 (Mill and Tailings Pond Effluent Characteristics) "Sodium cyanide is the most potentially toxic reagent to be used at the mill, followed by copper sulfate and xanthates."	117.160 See response no. 86.4. Settling pond maintenance is only expected to be a problem in alternatives C and D. In the other alternatives the plant area would drain into the tailings pond for surface runoff control.
117.162	"Xanthate residues of up to 2 mg/l can occur in waters associated with flotation mill tailings. ...Xanthates can be toxic at levels above 0.1 mg/l but are unstable in aqueous solutions and readily break down to low levels of sodium carbonate (soda ash), carbon dioxide and hydrogen sulfide which is rapidly dissipated (HDR, 1990)." The draft NPDES permit does not include limits for xanthates. The EIS should better describe the residual products of xanthates in the effluent and expected levels in the discharge. Impacts to aquatic life should be described.	117.161 Treated sewage effluent will be discharged directly to the marine outfall in a pipeline that bypasses the tailings impoundment. Both the tailings pond effluent and treated domestic waste effluents will be discharged from a single point under the requirements of a single NPDES permit.
117.162	Data are not provided that demonstrate that xanthate decomposes resulting in formation of H ₂ S. At low pH, some H ₂ S will remain in the effluent. Estimated concentrations should be given. H ₂ S may need to be monitored in the tailings pond and the effluent.	117.162 Please see response no. 99.13. According to the information provided by the manufacturer, xanthates solution decomposes by hydrolysis into alcohols, carbonate and trithiocarbonate salts and carbon disulfide.
117.163	For the section on alkaline chlorination and biologic breakdown of cyanide, an undated U.S Department of the Interior National Park Service handbook is cited (Environmental Handbook for Cyanide Leaching Projects). A more applicable publication should be referenced here, especially if this publication deals principally with heap leaching in arid climates. Some indication of the efficacy of these breakdown mechanisms (photodecomposition, volatilization, etc.) in the local climate should be provided.	117.163 The reader is directed to JMM (1992) for a technical discussion of ambient cyanide decomposition. This unpublished report is available at the Juneau Ranger District.
117.164	"Metals from the processing are not anticipated in soluble form since the ore is generally void of sulfide mineralization." This does not appear to agree with statements in other sections that the ore is a sulfide telluride mineralization. It is correct that at high pH levels many of the heavy metals precipitate, but a small amount always remains in solution, increasing with decreasing pH and the volume of water available for dissolution. Therefore metals will be present in soluble form and their concentration must be monitored. Additional treatment should be discussed as an option in the event that soluble metals concentrations approach or exceed effluent limits. Additional treatment should also be discussed as an alternative to dilution in the marine receiving waters.	117.164 The comment in the DEIS refers to the lack of acid forming potential in the tailings. See FEIS Chapters 2 & 4 for a more thorough discussion of metals and treatment of waste water to remove metals.
117.165	The statements on page 4-14 that "metals from the processing are not anticipated to be present in soluble form at significant levels in wastewater ..." The resulting pH levels would precipitate most trace metals" seems to contradict the statement on page 4-15 that "effluents that are projected to reach concentrations above acute or chronic toxicity criteria	117.165 Based upon laboratory information developed for the Kensington project, as stated in the DEIS, approximately 10-20 percent of the total metals present are in the dissolved form. Chapter 4 of the FEIS provides a revised evaluation of the projected effluent quality from the tailings pond considering several alternative treatment options. Dilution factors necessary to achieve the target marine chronic standard are developed.

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for fresh water organisms include copper, silver, lead and zinc."

The third paragraph of column 2, page 5-15 states that "A 120 to 1 dilution of tailings pond effluent would be required to meet acute toxicity water quality criteria for lead (emphasis added)." This concentration of lead would seem far from insignificant. Also note that the values given here are freshwater water quality criteria, though the effluent is to be discharged into saltwater. This section should be redrafted to reflect the relationship of proposed effluent levels to saltwater criteria (the receiving waters).

By-products from the cyanide destruction process will include various nitrogen compounds including nitrate and free chlorine. Possible compounds and their concentrations levels should be estimated and monitored. If present at significant levels, they should be included in the effluent monitoring.

Why does the discussion center only on the application of freshwater water quality criteria, when the effluent is to be disposed in marine waters?

Describe what additional treatment for cyanide would be implemented and what concentrations of cyanide in the tailings pond can be expected with and without additional treatment.

Describe additional treatment if copper effluent standards cannot be met.

(Milling and Tailings Pond Effluent Characteristics) "Effluent data was taken from tailings decant water samples (Lakefield Research, 1990)." More information on this sample should be given, specifically the way representative ore samples for crushing were taken, how the cyanide destruction and other treatment were simulated, and number of replications done for the analysis. As water quality projections for the tailings impoundment and required dilution levels are based on these analyses, a more detailed explanation of the procedures and assumptions used should be provided. Of particular note was the use of a 2 hour, 48 hour and 10 day decants (Lakefield, 1990). For comparison, the AJ mine study by Lakefield used 2 hour, 7 day, 30 day and 99 day decants (AJ Mine Project Draft Environmental Impact Statement, 1991).

Estimates of tailings leachate and mine drainage were derived from monitoring on Site 101. Explain how this site is representative of the drainages.

The dilution required to achieve chronic toxicity for copper and lead should be stated here and compared to the dilution required to meet water quality criteria in the receiving

117.166

Nitrogen compounds in the pond effluent would be monitored as part of the operating plan monitoring parameters. Total nitrogen, nitrate and ammonia/ammonium levels will need to be evaluated and their absolute concentration at the edge of the mixing zone reported. The Forest Service assumes that the final NPDES permit will limit free chlorine residual in the discharge from the tailings pond to essential zero (dechlorination is included for all FEIS alternatives as necessary) and the project proponent will be required to treat the mill effluent to achieve the level prior to discharge into the pond or will have to demonstrate sufficient detention and chlorine demand in the tailings pond to insure that the free chlorine residual leaving the pond is extremely low and environmentally insignificant.

117.167

This comment refers to the section of the report entitled "Surface Water Hydrology." The references to water quality criteria primarily address the issue of accidental releases of tailings pond effluent into freshwater. Potential effects of the effluent on the marine environment were addressed on pages 4-27 to 4-33 of the DEIS.

117.168

Please see response no. 86.4.

117.169

Please see response no. 86.4.

117.170

Please see response no. 117.23. Also note the revised water treatment discussions in FEIS Chapters 2 and 4.

117.171

Site 101 measures the outfall of settling ponds controlling flow from the 800 level mine adit. The 800 level flows are mine drainage.

117.172

Please see Chapter 4, Surface Water Hydrology, Mill and Tailings Pond Effluent.

waters.

4-16

(Table 4-9) Error: footnote 11 does not apply to silver. The mean concentration for silver is not "less than detected." The mean concentration for silver in the effluent is reported as .002 mg/L; the mean concentration in the mine drainage and surface water is reported as <.010 mg/L. The mean would be somewhere between .002 and .010 mg/L, and not zero as was used for estimating dilution requirements.

117.173

4-17

(Will and Tailings Pond Effluent Characteristics) This section contains several seeming contradictions or inaccuracies:

117.174

"Further reduction of cyanide would occur as a result of exposure to air and sunlight" (first sentence). Sunlight does not break down cyanide, it breaks down iron cyanides, liberating free cyanide from a compound that is otherwise relatively insoluble and non-toxic. This seeming misconception is repeated in the following paragraph which alludes to the "rapid breakdown ... of free cyanide ... from ... photo-decomposition. The breakdown of iron cyanides should make the effluent more, not less toxic.

117.175

The second paragraph also alludes to "reactions with sulfides" as a factor that will reduce cyanide concentrations, yet page 4-14, column 2, paragraph 3 states "the ore is generally void of sulfide mineralization."

117.176

Paragraph 1 describes how "under aerobic conditions, cyanide is quickly converted to nitrates through biological oxidation" yet column 2 paragraph 2 states that breakdown of ammonia is "a slow process due to low numbers of nitrifying bacteria." The conversion of cyanide to nitrates involves ammonia as an intermediate product, so how can both statements be correct?

117.176

The criteria used here are freshwater criteria, yet the receiving waters will be saltwater. The saltwater criterion for cyanide is 1µg/L as opposed to 5.2 µg/L for freshwater.

117.177

The last paragraph in column 1 states that ammonia and nitrate are the final cyanide degradation products and that concentrations in the tailings pond could increase by a factor of 10, exceeding freshwater acute toxicity. Therefore, in addition to surface water monitoring sites nitrate and ammonia should also be monitored in the tailings pond, effluent and in receiving water. Effluent standards should be set for nitrate and ammonia if concentration estimates warrant it.

117.178

Note also that although cyanide may be broken down to yield CO₂ and ammonia, ammonia may be as toxic as cyanide to fishes

117.173

The value of 0.010 was used in calculations to be conservative. The zero value was not used in estimating dilution requirements.

117.174

Chatwin (1990) addresses this point directly when he says "...even tightly bound iron-complex anions can dissociate to release the cyanide (CN⁻) ion in the presence of UV radiation or very strong acids. While these conditions may occur in the laboratory, they seldom occur in nature..."

As to the effect this dissociation would have on surface waters, Doudoroff (1976, cited in Chatwin) states; "Even if the iron-cyanide complex reaches a surface water where it can be dissociated by UV radiation, the slow liberation of free cyanide in a neutral surface water may react or volatilize as rapidly as it is released presenting little actual risk..."

117.175

The ore is very low in terms of sulfur content as it relates to the ability of the tailings to produce acid drainage, especially when considered as part of a mass balance with its neutralization potential. However, the sulfur content in the ore is significant in terms of its ability to destroy cyanide.

117.176

See response to Comment 117.167.

117.177

Your comments have been transmitted to EPA for their consideration. Please note that the Draft NPDES permit (Appendix D) requires ammonia monitoring.

117.178

The potential effects of ammonia are addressed in Chapter 4 of the FEIS.

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(Doudoroff, 1976)⁵.

117.179 Type second column, 3rd paragraph, second to last sentence: tailings pond not tailings mill.

4-18 117.180 (Underground Mine Drainage) The decision factors that will be used to determine whether or not sediment pond water would be recycled or discharged to the tailings pond should be given.

4-19 117.181 (Tailings Disposal) The Draft EIS states that the reconstructed channels across the Sherman Creek tailings impoundment will require an annual program of maintenance, and erosion control may be required in perpetuity after mining ceases. Indicate who will be responsible and what the bonding requirements are for this long-term maintenance.

4-19 117.182 (Water Supply/Column 2, Paragraphs 2 and 3) It appears from the discussion on page 4-14 that up to 1000 gpm may be available from underground mine workings. Why not attempt to use this water source rather than proposing to reduce flows to Sherman Creek?

4-19 117.183 (Accidental Spills) The total cyanide concentrations predicted for the tailings pond are 0.03 - 0.05 mg/l, or 30.0 - 50.0 ug/l; the EPA Gold Book limit for total cyanide in fresh water is 5.2 ug/l, and 1.0 ug/l for sea water. The predicted total cyanide concentrations for the tailings pond are 6 to 10 times the Gold Book standard for fresh water, and 30 to 50 times that for sea water. If tailings pond water was discharged into Lynn Canal, would the dilution in the mixing zone be sufficient to render the cyanide harmless?

4-23 117.184 (Mine Water/Column 1, Paragraph 3) Is it also possible that the increase in sulfates between the upper and lower adits (16.0 mg/L to 374.5 mg/L) is not accompanied by a corresponding rise in pH because the hydrogen ions are being buffered by some other material?

4-23 117.185 (Tailings Disposal) Monitoring requirements would be part of the solid waste permit, if the permit is required (see cover letter).

4-26 117.186 (AQUATIC RESOURCES - Marine Discharges) The Kensington Venture is considering depths of 50, 75 and 100 meters for the

117.179 The FEIS has been revised per your comment.

117.180

Mine water drainage will be used in the process. It will initially be discharged to the tailings pond, combined with other process water and returned to the process plant for reuse.

117.181

Please see response no. 7.5.

117.182

Please see response no. 117.180.

117.183

The potential impacts of discharging cyanide levels projected in the DEIS were described on pages 4-32 and 4-33. At those cyanide levels, no effects are expected on the biota within the mixing zone.

117.184

We believe that the unaffected pH is, as you suggest, the result of natural buffering. See FEIS Chapter 3 Surface Water Hydrology.

117.185

Comment noted.

117.186

Chapter 4 of the FEIS addresses all of the outfall depths being considered for the project. In response to interest in a shallow-water alternative, a preliminary comparative assessment of a 50 m and 100 m diffuser have been included in Chapter 4 of the FEIS (see also Kessler and Vigers, 1992).

⁵ Doudoroff, P. 1976. Toxicity to fish of cyanides and related compounds: a review. Duluth, Minnesota: U.S. Environmental Protection Agency, Office of Research and Development.

Kensington DEIS/Encl. 1	30	depth of the marine outfall (Letter from Rick Richens to Amy Kruse, 18 July 1991). Incorporate the more recent projections for the outfall. The final configuration of the outfall will be determined through the NPDES process. However, include estimates of impacts to aquatic resources at all proposed depths of the outfall.	117.186
		The effluent treatment option of pre-mixing with seawater in the outfall pipe is being considered by the applicant. An analysis of how such mixing will effect the buoyancy of the plume should be analyzed. Discuss the results.	117.187
		This section contains an excellent discussion of mixing zone characteristics and effluent dilutions. However, there is no way to relate this discussion to the particular habitats and species that might be affected, since we don't know what species and habitats exist at the proposed outfall location and along the pipeline route.	117.188
4-26		(Marine Discharges/column 2, Paragraph 3, Three Port Diffuser) Alaska Water Quality Standards require that a mixing zone be as small as practicable. In a meeting between local, state and federal agencies, the Forest Service, and representatives of the Kensington Venture and its contractors, RESCAN representatives presented information about a diffuser designed for a mine in South America, which achieves an initial dilution on the order of a thousand to one. Discuss other alternatives for the diffuser design and the location of the marine outfall.	117.189
4-27		(Marine Discharges) The analysis by RESCAN of outfall plume behavior in the water column indicates that during April conditions, the plume would encroach on the photic zone (>1% light level). This has implications for aquatic life use of the zone which should be addressed. Effects on aquatic resources that utilize this zone should be explained.	117.190
		In the RESCAN Oceanography and Marine Discharge Evaluation, effluent temperatures at the diffuser were taken to be 10°C throughout the year. These will vary, but the resultant change does not appear to significantly change the mixing zone size.	117.191
		All model runs presented are at zero current flow. This gives the maximum rise of plume, but does not outline the length and breadth of the proposed mixing zone. The state understands that the consultant modelled worst case conditions at low flow. Runs at other current velocities should be run to confirm that zero flow is indeed worst case.	117.192
4-27		Draft EIS figures indicate that the maximum plume rise will be	
		Refer to the FEIS for an assessment of seawater pre-mixing.	117.187
		Species composition and a description of the habitat in the vicinity of the outfall were described on pages 3-17 to 3-25 of the DEIS. There is no reason to believe that species composition or habitat features are different than those described for the general vicinity. As discussed in the responses no. 5.2 and 117.149 there can be tremendous variability in the abundance of animals in such areas from year to year due entirely to natural processes that are not well understood. Species composition at the precise locations of the outfall and pipeline doubtlessly changes significantly throughout the year. The approach taken in the EIS to assessing impacts assumed that all species in the general vicinity could be utilizing the areas along the pipeline.	117.188
		Refer to Chapter 4 of the FEIS which presents a preliminary evaluation of mixing zone characteristics (volume, shape, depth and edge of mixing zone performance) for several diffusers, one partially optimized for shallow-water, the other for deep-water deployment. See also Kessler and Vigers (1992) for a more complete discussion.	117.189
		Refer to Chapter 4 of the FEIS which presents an expanded analysis of discharge plume characteristics (see also Kessler and Vigers 1992).	117.190
		The diffuser performance analysis did examine the effects of end-of-pipe wastewater temperature. However, the buoyancy which primarily drives the initial dilution process is determined almost entirely by the salinity difference between the freshwater wastewater and the Lynn Canal seawater and temperature has an insignificant effect. Hence it is not included in the analysis presented in the FEIS (see Kessler and Vigers, 1992)	117.191
		The physical processes underlying the initial mixing process demand that zero ambient horizontal currents are the worst case (a non-zero current imparts its momentum on the discharge plume, thereby providing additional energy above the potential energy of buoyancy to help drive the mixing process). Vertical (upwards) currents would adversely affect diffuser performance by transporting the discharge plume toward the surface without necessarily contributing further to mixing. Coherent motions in the ocean are primarily horizontal except for regions where bottom and shoreline topography deflect these currents creating regions of upwelling.	117.192

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117.193	35m. The RESCAN report (April, 1991), Table 3-2 indicates that the maximum rise will be 71m. This difference should be clarified. It is not at all certain that migrating near-surface species such as salmon would be clear of the effluent plume.	117.193 Refer to Chapter 4 of the FEIS which discusses mixing zone characteristics. See also Kessler and Vigers (1992). The volume of the mixing zone is calculated to never exceed 1/1,000,000th of the volume represented by Lynn Canal north of Point Sherman. This volume maximum occurs in the spring when the density stratification of the water column is at its lowest. Thus the likelihood of any particular fish entering the mixing zone is small and it is likely that any fish would remain for only a relatively short period compared to the time required for chronic effects to occur. Refer also to response no. 111.9.
4-28	(Aquatic Resources - Marine Discharges) First Paragraph: "The effluent stream is characterized in Table 4-9 . . . under the column entitled <u>Combined Tailings Pond Discharge Water Quality</u> . The column that may be referred to is entitled: "Average Pond Effluent".	117.194 Please see response no. 100.38.
4-27 to 117.195	Figure 4-8 depicts plume discharge for September flow. Depict the worst case conditions of April (and other seasons perhaps) for comparison.	117.195 Refer to Chapter 4 of the FEIS and to the technical support document Kessler and Vigers (1992) which present expanded assessments of discharge plume characteristics for the range of environmental conditions that occur in Lynn Canal.
117.196	4-31 Some species of fish and shellfish, responding to the behavioral patterns of their prey, exhibit diurnal vertical migrations (e.g., herring, shrimp, squid). Would there be a problem in the vicinity of the effluent plume? What such pelagic species will be present in the vicinity of the effluent plume on a seasonal basis? What prey species of plankton will be present?	117.196 The major species that exhibit diurnal vertical migrations in the general vicinity are Pacific herring (Carlson, 1980), pink shrimp (Barr and McBride, 1967; Butler, 1980), sidestripe shrimp (Butler, 1991), and spot shrimp (Butler, 1980). In general, most of the shrimp species classified by Butler as being thin-shelled exhibit some form of diurnal vertical migration. One species, the coonstripe, which is thick-shelled, does not.
4-28 to 117.197	4-31 What effect would settling particulate matter from the effluent have on bottom dwellers, e.g., crabs. What species are present on the bottom in the vicinity of the effluent plume on a seasonal basis?	
4-29	(Table 4-11) To estimate maximum possible concentrations of cadmium, mercury, selenium and silver, the detection limits provided in Table 4-9 should be used. It is not acceptable to use zero, because the metal could be present at a concentration lower than was detectable by the analytical method used. In the case of cadmium, mercury, selenium and silver, at concentrations < 0.010 mg/L, ambient marine concentrations would be higher than marine chronic criteria. An ambient concentration was derived for mercury, in spite of the less detected value; this procedure should be explained. Why was this not done for cadmium, selenium and silver?	
117.198	(Marine Discharge) "Factors affecting the rate of bioaccumulation and the toxic effects of these processes are complex and preclude widely applicable generalizations (Phillips and Russo, 1978). As bioaccumulation and biomagnification in fisheries resources have been a key concern in public comments, supply a more recent review of bioaccumulation rates. Augment Figure 4-9, "Projected Concentrations of Critical Plume Constituents" with data from April water conditions.	
4-30		
117.199		

117.197

It is assumed that this comment is directed at the potential for smothering effects on the benthos. A worst case scenario was evaluated that assumed the effluent would contain a total suspended solids (TSS) loading far in excess (10 times) of what would be permitted (Kessler and Vigers, 1992). If an NPDES permit were granted, it would allow an average TSS concentration of 20 mg/l. The worst case analysis assumed a concentration of 10 times the amount that would be allowed. This assumption was made simply to assess what could be expected under a greatly exaggerated amount. The study showed that sedimentation levels, even under these conditions, are inconsequential with respect to smothering and colonization of bottom dwelling organisms.

Species present in the area were described on DEIS pages 3-19 to 3-22. Additional material is given in Chapter 3 of the FEIS.

The potential effects of bioaccumulation that could occur in the vicinity were discussed on DEIS pages 4-30 to 4-32. Additional material is given in FEIS Chapter 4 and in Kessler and Vigers (1992).

117.198

Please see Chapter 4, Aquatic Resources Freshwater Marine Discharges. Zero was not used in estimating discharge concentrations. Please see response no. 117.173.

117.199

As noted in the response to Comment 117.197, additional information on bioaccumulation is provided in Chapter 4 of the FEIS. Concentrations of various constituents within the plume during April water conditions are also depicted. A review of the potential effects of bioaccumulation is also provided in Kessler and Vigers (1992).

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4-30	117.200	(Impacts of Heavy Metals/Column 3, First paragraph) What is the basis for the statement that "Schooling marine fish such as Pacific cod, sablefish, herring and walleye pollock would tend to feed within the mixing zone for very short periods, before moving in response to prey or currents"? It is our experience that these species may remain feeding in one area for weeks at a time, and that current patterns in the vicinity of Point Sherman tend to concentrate fish and feed (ie, salmon), not disperse them.	117.200	These species are not stationary, though they may stay in a general area for a period of time and feed. The statement in question is directed solely at the length of time that these fish would be within the "mixing zone", a volume of water that would be quite small. If a mixing zone is allowed, it would necessarily be as small as is practical. The discussion in the DEIS was based on the assumption that the zone would be of a size closely approximating the area needed to meet water quality criteria and no more. Such a zone could be expected to have a radius less than 100 meters, perhaps even less than 50 meters. The species mentioned would not be expected to remain stationary within such a small area for an extended period of time. Pelagic prey would be expected to move considerably during the course of a single day, as influenced by tides, wind driven currents and estuarine flow. Demersal fishes feeding on the benthos would also not be expected to be exposed to the effluent for extended periods of time due to the behavior of the plume (i.e., its upward movement).
4-31		(Impact of Heavy Metals) Why are the possible environmental consequences of the proposed effluent discharge to animals and plants within the proposed mixing zone, or in the vicinity of the outfall, not described?		
117.201		Note that the discussion in column three focuses on blue mussels in the intertidal zone. However the effluent is not expected to ever reach this zone in either significant or measurable quantities. It is the effects upon habitats and populations in the vicinity of the proposed outfall that we are of concern.		
4-32		(Impact of Heavy Metals cont.) "Elimination of all free cyanide can be assured by increasing the chlorine in the destruction process to the point of measuring detectable levels of residual chlorine. This process is currently implemented by Greens Creek Mine." The chlorination process is no longer used by the Greens Creek mine, because it did not effectively destroy the cyanide and caused upsets in the effluent composition. It has been replaced by the hydrogen peroxide process.		There is no evidence suggesting that salmon would remain within an area as restricted as the likely size of a mixing zone for "weeks", either in the Kensington area or in other similar locations. On the contrary, all available information on life histories, migration rates and feeding behavior indicate otherwise. The work that was done in the summer 1991 at the Kensington site together with other studies in the general Lynn Canal/Chatham Strait area all demonstrate the tendency toward movement.
4-36	117.203	The 2nd para. under "Water Withdrawal" is confusing. What is the significance of the fact that the 7Q10L is "slightly more than three times the maximum proposed withdrawal"? This section could benefit by a graph showing the probability (or recurrence interval) curves for low flows of varying durations (7, 15, 30 day, etc.).	117.201	The potential environmental consequences to organisms that would pass through a mixing zone were described in the DEIS on pages 4-28 to 4-33. The reason for discussing the intertidal zone (including mussels located there) on page 4-31 of the DEIS was to address concerns about the impact of the effluent on this community. Additional discussion on this matter is provided in Chapter 4 of the FEIS.
117.204		The following para. describing impacts to egg survival could be improved by a lay-language explanation of the probabilities meant by a 2-year or 10-year low flow event.	117.202	The FEIS has been revised per your observation.
4-36		The Draft EIS notes that the approximately three miles of stream diversion will be fatal to fish within these reaches. Note 4 that these are the most potentially productive sections of the stream. Reclamation plans should be designed to restore the value of these stream sections to their former values (or better) for fish habitat.		
117.205			117.203	The discussion is intended to place the flow rates in context with the expected withdrawals. The 7Q10L is an extreme low flow event but even under these conditions, withdrawals proposed by the Kensington Venture would not deplete the stream completely. ADNR will, however, still set stream flow minimums that prohibit withdrawals under certain low flow conditions to protect fish.
4-38 through 117.206				

both Sherman and Ophir Creeks. Figure 2-1 does show a portion of the Sherman Creek diversion, but it is not labelled and the scale of the drawing is not useful.

The Draft EIS states that the diversions of sections of Ophir Creek and Sherman Creek would be fatal to fish residing within the natural stream. Discuss mitigation of these losses.

(Habitat Loss and Human Presence, paragraph 1) "Habitat losses associated with the Kensington Project would be primarily long-term. Long-term habitat losses are associated with development sites that would not be reclaimed for the duration of the project operations (approximately 12 years). Although final reclamation would be initiated during mine closure phases, revegetation efforts would not be able to replace old-growth forest habitats that were lost during development." This section talks about the loss of habitat being long term, but does not define clearly what long term is or specifically what target habitat. After reading the section one assumes it refers to old-growth forest. Say that at the beginning of the discussion.

4-48, 4-49 (Mountain Goat) A lengthy discussion is presented on noise associated with mine development. Discuss noise disturbance related to radio collaring studies on goats and the stress levels generated in goats related to this activity and what impact it has on temporary habitat displacement.

4-65 (RECREATION RESOURCES) The additional population attracted to Juneau by Kensington is only a part of the total picture. The pressure on local recreational opportunities, both indoor, outdoor, hunting and fishing, will increase. As the mining industry often has staggered work shifts, a portion of the work force would be off duty on any given day and may produce a different impact local opportunities than a standard five-day, eight-to-five work force. Address this issue.

(SOCIOECONOMICS) This section deals with projected direct and indirect population increase due to the mine and impact on the Juneau housing situation. This section indicates that 1200 people would be added to the Juneau population as a result of the direct and indirect jobs from the mine and would require 827 new homes. These numbers do not follow. Using the 1200 figure, the new housing requirement would be 480 (at the Borough average of 2.5 people per household) and using the Greens Creek average of 3.8 people per household only 315 new housing units would be required. This section requires further work and clarification.

(Effects on CBJ Revenues and Expenditures) These comparisons only account for the minimum mine life as currently defined. Provide approximations for extended mine life. Expenses to

117.204

The 2-year and 10-year low flow events are statistically derived predictions. The predictions say that for each 2 (or 10) year time interval, the stream flow could be expected to be at or below the predicted flow for 7 days.

117.205

Please see responses no. 111.12 and 117.147.

117.206

Please see response no. 117.81.

117.207

One of the goals for reclamation of the Ophir and Sherman Creek diversions would be to re-establish aquatic habitat within the re-constructed channels that will be of equal or higher value than is present prior to construction of the diversions. If necessary, fish would be transported from nearby systems to re-establish lost populations.

117.208

This paragraph has been revised in the FEIS to refer specifically to old-growth forest.

117.209

Preliminary findings derived from the ADF&G radio-collar monitoring studies of mountain goat at the project site including effects caused by the study have been added to the discussion of noise disturbance to mountain goats in the FEIS.

117.210

The staggered shift schedule you mention will help mitigate the impacts of additional population on recreation resources. Consider the off-hour demand that these workers would have for recreation relative to the demand placed on those facilities by the large population of daytime workers that currently use the resources. A more balanced use of recreation facilities would likely result.

117.211

Please see response to no. 116.48.

117.212

The immediate impact of costs to the CBJ is not realistically offset by benefits obtained fifteen years into the future. Juneau residents today will incur the costs of a population increase regardless of what happens in the future.

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117.212 CBJ are loaded at the project implementation, while revenue is increased the longer the project is in operation. In essence, the longer the mine is in production the more positive net revenue to CBJ since the fixed costs have already been realized in the early years of the project.

GLOSSARY

T-2 Bioaccumulation: Refers to the progressive accumulation and concentration of a chemical in animal or plant tissues.

T-7 The term Holocene should be capitalized as it is a specific geologic time period.

117.213 T-17 Suggest this definition for vein: An epigenetic mineral filling of a fracture in a host rock, in tabular or sheetlike form, often with associated replacement of the host rock; a mineral deposit of this form. This definition is from the AMI Glossary of Geology.

APPLICANT

PROPOSAL - APPENDIX A - F

Part A - Applicant Proposal

A5 (Marine Terminal) The schematic of the barge facility indicates that materials will be removed from the tidelands seaward of the line of mean high water (also F-7 Draft COE Permit). The removal of materials from state land requires that they be purchased.

117.214 A11 (SOLID WASTE DISPOSAL) The container system described is adequate. The chemicals and filters will have to have a hazardous waste determination made on them (40 CFR 262.11). The scrap metal should be either recycled or sent to a recycler, as should all potentially recyclable waste streams.

A11 (SEWAGE DISPOSAL) This section refers to tertiary treatment and that its effluent is known as grey water. This is incorrect usage.

A13 (UNDERGROUND DEVELOPMENT ROCK DISPOSAL) Final disposal of excess (that is not put to a beneficial use) underground development rock would require a solid waste permit (see cover letter).

A15 (Ore Processing Plan) Explain "detoxified leach residue slurry".

A16 (Figure A-12) "CN neutralization circuit". This probably refers to cyanide destruction. It is important that terms describe a specific process accurately and consistently.

117.213

Thank you for your input. The FEIS has been revised accordingly.

117.214

The comment refers to information supplied in the applicant proposal. We have noted your comments as they apply to the evaluation of impacts.

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A18	(Grinding) Describe the fate of the spent grinding balls (disposal or recycle).
A20	(Cyanide Destruction Circuit) Since excess chlorine is used to destroy the cyanide, residual chlorine should be monitored in the mill effluent and in the tailings pond discharge.
A21	(Laboratory Facility) "An EPA certified environmental laboratory will be used to confirm all environmental sampling" ... This statement is misleading because there are no "EPA certified labs". Laboratories can be certified for specific parameters only, e.g. drinking water parameters or water pollution parameters. The state of Alaska only conducts a drinking water certification program which does not include certification for all parameters that will be monitored under the NPDES permit. The state of Washington maintains a Waste Water Accreditation program, but there is no EPA certification program for Region 10.
117.214	The statement should be changed to: "For the analysis of environmental samples a laboratory will be used that follows established EPA analysis and quality control procedures and participates in EPA water pollution and/or solid waste performance studies. The performance of the lab will be routinely verified through split samples, blind samples and review of EPA performance results."
A25	Because of possible cross contamination and the low detection limits required for environmental samples the operations lab should not perform permit-required environmental analyses.
	Some quantities in the water balance diagram (Figure A18) differ from those proposed in the draft NPDES permit. Mine drainage is listed as 274 gpm average and 800 gpm maximum. The draft NPDES permit states a mine discharge of 1000 gpm.
	The water balance schematic also shows an average flow into the tailings pond for "precipitation within total catchment", but no peak flow. It also shows a net inflow into the tailings pond at an average flow of 557 gpm, with 223 gpm remaining in the tailings. 334 gpm are unaccounted for. Also, what happens to the 223 gpm (446 peak) flow that stays in the tailings. Is it partly stored, evaporated and/or lost by seepage?
A26	Under "Water Balance & Supply" the matter of consideration of a well field to supplement water supply during winter low flows is brought up. When considered along with the concerns expressed elsewhere for minimum flows for resident fish (4-36, A23, A28), this raises the possibility that wells could be viewed also as a way of reducing the surface water supply withdrawals in order to maintain minimum flows for fish, not

only as better assurance of water supply for the project. However, it then becomes necessary to locate and characterize the subsurface water resources in the project area with a view not only to its potential as a water supply, but as a contributing element of base flows to the streams being impacted. In short, without further information, we don't know if subsurface withdrawals would mitigate or exacerbate the minimum flow problem. If there is a significant possibility that there may simply not be enough water in the basin, both surface and subsurface, for both the project and the resident fish, the EIS should confront this possibility.

A27

(Mining) "The settled material (sediment) will be periodically removed from the ponds, and placed in the tailings pond." It is not clear how the proposed sediment ponds will operate when the tailings impoundment reaches its maximum volume.

A30

(PRE-OPERATION AND CYANIDE LEACHING) "Rainwater accumulated after a major storm can be returned to the mill water tank by this sump pump only after a cyanide analysis indicates that this is acceptable." This may be difficult for the applicant to actuate without cyanide analysis instrumentation on-site and the highly trained technical staff required for this analytical method. The cyanide levels at which the batch release to the tailings sump would occur and which analysis method for cyanide levels used should be explained. Any "quick method" is probably prone to interferences and will not allow accurate measurements. The level of error inherent in these measurements should be determined, to get a reasonable estimate on the actual cyanide concentrations discharged into the pond. Again, "cyanide destruction" would be the appropriate term (see comment above).

A31

(TAILINGS IMPOUNDMENT) A laminar discharge of tailings slurry in a "beach" surrounding the tailings impoundment is proposed. Further details should be given on how snow removal will be accomplished without disrupting the layers and how ice buildup will be avoided.

Part B - Environmental Management

B2

(Tailings Disposal) Add to first sentence - after cyanide - in column 2, paragraph 3: "and other contaminants"

B4

(Surface Water Hydrology) "Kensington Venture will design and operate a zero discharge facility for the tailings disposal site." Zero discharge does not mean that no pollutants are discharged but refers to no volume of water being discharged in addition to regular flow from the creeks, drainages and precipitation. "Zero discharge" is generally used for effluents to indicate that no detectable amount of a

pollutant can be discharged. Therefore this expression should not be used in this context.

Part C - Reclamation Plan

C5 (Figure C3 Reconstructed Drainage Through Tailings) Will this cross section of the reconstructed stream channels be able to contain the stream during high flows? Could erosion in the "Flood Zone" divert the stream from (or undermine) it's riprapped channel? Will the tailings in the "Flood Zone" be highly erodible? Are there examples of similar successful reclamation projects in high precipitation areas?

What will be done to ensure that these reconstructed stream sections become useful fish and wildlife habitats?

C6 (Figure C-4- Project Post Operational Topography) A topographic map that represents an area of approximately two square miles should have more than four contour lines, and a consistent contour interval. Otherwise it does not convey very much useful information.

117.214

Part D - Environmental Monitoring and Reporting

D1 (Environmental Monitoring) Tailings pond discharge and marine sediment near the outfall should be added to the list of monitoring areas.

D3 ((Field Measurements) Add: "Records of all field sampling and calibration activities will be maintained."

D3 (Water Sample Collection) Change: " Sample bottles will be obtained from an EPA certified laboratory to the laboratories that will perform the analyses."

D3 (Data Management and Reporting) Change the record retention time from minimum of 3 years to the duration of mining operations and a minimum of three years after mine closure.

D4 (Table D2 - Water Monitoring Parameters) Only the parameters that are actually being monitored should be listed in this table. The preferred methods of analysis are EPA methods. Seawater parameters must be analyzed using different methods that can achieve detection limits below water quality criteria. A footnote to this effect will be adequate.

D4 (Table D2 - Water Monitoring Parameters) Change hydroxide to alkalinity. Because of the excess chlorine used in the cyanide destruction process, residual chlorine should be added to the effluent monitoring parameters.

D5 (Data Management and Reporting) Add EPA Puget Sound Protocols

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to the list of analysis methods. These apply to sediment, seawater and bioassay sampling and test procedures.

D7

(Verification of Records) Change "samples will be delivered to an EPA certified laboratory to " samples will be delivered to the laboratory" (see comment D3).

D7

(Data Management and Reporting) Change the monitoring records retention time to: "throughout the duration of the mine project and three years after mine closure."

D10

(Hydrologic Monitoring) Low detection limits are required for surface and groundwater samples, which require sensitive instrumentation, strict adherence to analytical protocols, quality assurance procedures and avoidance of sample contamination. These analyses may be beyond the capability of an on-site lab and will probably need to be done by a qualified environmental laboratory.

117.214

Part F - Hazardous Material Handling Plan

This section did not address any of the requirements for RCRA, though it was stated on page 2-18 under hazardous waste disposal that the facility would be a Small Quantity Generator and would comply with all the pertinent regulations. Hazardous Waste should have been discussed in this section.

Part G - Health and Safety Plan

G1 & 2

(Inservice Training) The Kensington joint venture is already an active participant of the University of Alaska Southeast's Institute of Mining Technology. Reflect this commitment to local hire and indicate that many of the mine workers will likely be graduates of this program.

APPENDIX D2 - SURFACE AND GROUNDWATER QUALITY DATA

D2-2

(Table D2-2, Baseline Water Monitoring Parameters) Detection limits for copper and silver (10 ug/L) will not be adequate to meet Alaska water quality standards. Analysis methods for surface waters, and marine waters must be changed to achieve lower detection limits (in the range of 1 ug/L) and to obtain a sufficient number of data points for use as baseline data.

117.215

117.215
Please see response no. 117.32.

D2-3

(Table D2-3, Surface Water quality Data) Median values don't provide any information on the frequency of high concentrations or increases with time. It would be more useful to calculate mean concentrations and update them annually to observe trends (this recommendation was forwarded to the Forest Service in March 1991).

117.216

117.216

The EIS baseline description is designed to meet NEPA requirements to "succinctly describe the area(s) to be affected" and to be "no longer than is necessary to understand the effects of the alternatives" (40 CFR 1502.15). If the State has other needs not satisfied by the EIS then additional data compilation may have to be done. The Forest Service would be pleased to supply the State any raw data needed from our files for your review and compilation.

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D2-4 (Table D2-3) Spell out TKN, TDS, TSS or explain acronyms in a footnote.

117.217

APPENDIX D3 - OCEANOGRAPHIC DATA

D3-4 to 6

(Table D3-3 Bottom Sediments Solids Chemistry) Concentrations are reported in ug/L (which are liquid concentrations). Concentrations should be reported as dry weight concentrations in ug/kg or mg/kg. This could be either due to a reporting error or that instrument readout concentrations were not converted to solid concentrations. The data as presented cannot be used as baseline data. No reference was made to sediment sampling procedures and analysis in earlier sections.

117.218

117.217

Comment noted.

117.218

The footnote in Tables 3-3 and 3-4 of the DEIS is incorrect and should refer to units of ug/kg. Reference should be made to the supporting document Rescan (1990).

117.219

Sediment samples were analyzed by Analytical Services Laboratory (ASL) in Vancouver, British Columbia. This is an internationally recognized laboratory employing state-of-the-art analytical techniques. While some of the procedures at ASL do not coincide exactly with current EPA practices, strict quality control analysis, carried out by ASL using standard reference materials, indicated recoveries consistently greater than 85 percent. Thus these data can be compared to past and future data provided that these other data gathering efforts also follow the established and expected procedure of including a quality control component.

117.219



Sunrise, Mt. McKinley

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SIERRA CLUB LEGAL DEFENSE FUND, INC.

The Law Firm for the Environmental Movement

September 3, 1991

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JUNEAU
RANGER DISTRICT

DEPUTY RANGER
DISTRICT RANGER

Mr. Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, AK 99801

Re: Comments on the Kensington Mine Project Draft EIS

Dear Mr. Mitchell:

On behalf of the Southeast Alaska Conservation Council, Lynn Canal Conservation, and the Juneau Group of the Alaska Chapter of the Sierra Club the Sierra Club Legal Defense Fund submits the following comments on the draft environmental impact statement (DEIS) prepared by the Forest Service for the Kensington Venture's proposed gold mine north of Juneau. These comments supplement any additional comments submitted by these organizations.

INTRODUCTION

As we discuss below, the DEIS fails to meet NEPA's basic requirements. Perhaps most significantly, the DEIS relies on inadequate and incomplete baseline studies of the project area, and, consequently, its assessment of potential impacts is inadequate. A second major deficiency is that the DEIS fails to consider a range of reasonable alternatives as required by NEPA. In addition, the DEIS fails to consider mitigation measures for many of the project's major impacts and fails to adequately consider cumulative impacts. Moreover, the DEIS violates federal, state and local reclamation requirements.

Thus, the DEIS fails to meet NEPA's main purpose, which is to inform the public and decisionmakers of the potential impacts of a project and possible ways to avoid or minimize those impacts.

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Mr. Kenneth E. Mitchell
September 3, 1991
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The substantial deficiencies in the DEIS precludes meaningful analysis and thus makes it impossible to recommend an alternative at this time.¹ Thus, after gathering additional baseline data and evaluating additional alternatives, the Forest Service must issue a revised draft EIS to the public for additional comment as required by NEPA regulations, 40 C.F.R. § 1502.9(a).

GENERAL COMMENTS

A. THE ANALYSIS IN THE DEIS IS BASED ON INADEQUATE BASELINE DATA

For well over a year state and federal resource agencies as well as SEACC have repeatedly warned the Forest Service that existing baseline data on the resources that would be affected by the Kensington mine project is totally insufficient. The Forest Service ignored these warnings and prepared the DEIS using only minimal data.

Inadequate baseline data is by no means a trivial concern. Baseline data is the foundation of an adequate EIS; without it the entire analysis in an EIS is inadequate. Lack of sufficient baseline data means the agency cannot describe the existing environment accurately. Without a sufficient description of the existing environment, the agency cannot predict the potential impacts that may occur to that environment and, consequently, the agency cannot design an adequate monitoring and mitigation program.

Baseline data is insufficient throughout the DEIS. For example, as resource agencies and SEACC have consistently pointed out, the "studies" conducted to date on the marine environment (for both aquatic species and the oceanography of Lynn Canal) are, for the most part, surveys conducted over a limited time period. To be adequate studies must be repeatable and must be conducted over at least one year in order to accurately account for seasonal variations.

One of the most critical deficiencies is the data on the flushing rate of Lynn Canal in the proposed location for the tailings pond outfall. Data for the flushing of the mixing zone were collected at only three points: one near Point Sherman, a second 100 kilometers

¹ Although we believe that the DEIS does not include enough information for us to recommend one of the alternatives, we concur with the three changes the Forest Service has proposed to the applicant's proposal.

118.1

The scale legend shown in Figure 3-14 of the DEIS is incorrect and should read 0 to 5 kilometers and not 0 to 50 as shown.

Refer to Chapter 4 of the FEIS which presents an expanded analysis of flushing properties and other factors affecting the environmental impact of the submarine discharge of wastewater. Kessler and Vigers (1992) should also be reviewed if a more complete technical discussion is desired. The conclusion is that flushing is sufficient to keep the background increase in wastewater contaminants below measurable levels (see also response 87.1).

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Page 3

north of Point Sherman, and a third 80 kilometers south. DEIS at 3-17, Figure 3-14. Moreover, as the consultant who compiled the flushing data has admitted, the area around Point Sherman where the tailings pond outfall is proposed experiences local eddy currents which are likely caused by tidal movement of water around Point Sherman. Presentation of T. Kessler, Rescan Environmental Services, Kensington NPDES Workshop, Haines, (Aug. 8, 1991).

Only qualitative inferences of flushing rates and viability can be drawn from the baseline data gathered to date. These data points are too far apart to allow any quantitative modelling of the flushing mechanism of the Canal, and the data from the one station at Point Sherman cannot be considered conclusive because it does not take into account the eddy currents in this area, which could conceivably introduce a delaying effect on the flushing around the mixing zone. Because the Rescan data is the only information gathered to date on Point Sherman flushing rates, the state, as well as Kensington, has used it in modelling for the proposed mixing zone. Thus, the modelling for the mixing zone assumes the waters that will dilute the mixing zone will be free from any pollutants. T. Kessler, Rescan, and Kenwyn George, ADEC, *Id.* In other words, it assumes the best possible case for dilution. Because sufficient site specific data has not been gathered on the currents at Point Sherman, this assumption is supported only by speculation. More data on the nature of the currents in the Pt. Sherman area must be collected before the assumptions used in modelling the mixing zone can be supported.

Additional deficiencies in marine baseline data are detailed in a recent letter from SEACC to the Forest Service. See Letter from Chris Finch to Roger Birk (Apr. 14, 1991) (Attachment #1).

In addition, adequate data on Sherman Creek flows has not been gathered. The information on Sherman Creek flows is merely an estimate based on a combination of historic data and limited data gathered for short time periods. Accurate flow data, gathered for preferably more than one year is crucial because the Kensington Venture has proposed to withdraw a large volume of water from upper Sherman Creek for the mill and domestic uses. Without this data it will be impossible to accurately determine the minimum flows that must be maintained in lower Sherman Creek in order to prevent damaging anadromous fish uses.

Moreover, the Forest Service has failed to gather information on wildlife populations in the area, especially black bear and goats which inhabit the project site. Instead, populations have been estimated using untested models. Data on local wildlife populations and habitats must be gathered and included in a revised draft EIS.

118.2

The calculations underlying the predicted concentrations for wastewater constituents presented in the DEIS and the FEIS take into account the effect of non-zero ambient conditions. Refer to FEIS Chapter 4 and Kessler and Vigers (1992).

118.3

Please see response no. 5.2.

118.4

Accurate flow data has been gathered for more than one year both in upper and lower Sherman Creek. In addition, weekly discharge measurements were taken by hand to verify automated flow data collected during the winter low flow period of 1990. Please see the FEIS for more description of low flow data. (Chapter 3, Surface Water Hydrology, Watershed Descriptions.)

118.5

Population projections for black bear and mountain goat in the DEIS were not solely based on the HSI models. Onsite aerial surveys of mountain goat and black bear population data from similar habitats in the region also were evaluated. The HSI models for black bear and mountain goat were developed by ADF&G and Forest Service biologists and are based on the most up-to-date habitat utilization information available for black bear and mountain goat in southeast Alaska. These models represent the current state-of-the-art for assessing habitat for these and other species. Population projections derived from these models for the Kensington study area are consistent with site-specific aerial survey data for mountain goat and for black bear populations observed in similar habitats in this region.

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Finally, the DEIS must include more information on wetlands. The DEIS includes only an estimate of the amount and types of wetlands in the project site. Site-specific data must be gathered and included to assist the Corps of Engineers in deciding whether to issue a 404 permit.

118.6

118.6

As indicated on DEIS page 3-34, site-specific wetland mapping of potential disturbance sites was conducted using the procedures outlined in the *Federal Manual for Delineating Jurisdictional Wetlands* (Federal Interagency Committee for Wetland Delineation, 1989). Results of this mapping effort are reported in a technical support document (IME, 1991b, as cited in FEIS) to the FEIS and were approved by the Corps of Engineers. Estimates of wetland disturbance were based on projections from the site-specific mapping and from detailed Tongass soils mapping for each action alternative (Also, see response no. 120.94).

B. THE DEIS FAILS TO ADEQUATELY EVALUATE A REASONABLE RANGE OF ALTERNATIVES

NEPA regulations require an EIS to "rigorously explore and objectively evaluate all reasonable alternatives" to a proposed action. 40 C.F.R. § 1502.14(a). The alternatives section is considered the "heart" of an EIS. Consideration of all reasonable alternatives informs the public and ensures that the agency has before it all possible approaches to alter the environmental impacts of a proposed action. The DEIS fails to consider alternatives as required by NEPA.

118.7

The DEIS considers three alternatives to Kensington Venture's proposal. However the alternatives consider primarily only alternative locations for a few components of the projects. Only one change in operations is considered, dewatered tailings, which is considered in Alternative E. The DEIS fails to consider a number of other operational changes which could alter the project's environmental impacts. Significantly, the DEIS fails to consider an alternative mining method, cut and fill. If the cut and fill method were used, backfilling of tailings would be possible -- which would reduce the amount of tailings to be disposed of on land. The Forest Service identified this as an option but eliminated it from detailed study on the basis that it is technically impossible and that it is too expensive. However, these reasons are insufficient.

The Forest Service is simply incorrect in concluding that cut and fill is not possible. Three of the six reasons presented in the DEIS for ruling cut and fill mining inappropriate are based on the premise that the cut and fill method² is technically infeasible. This conclusion is based on the assumption that the backfill used in the method will not be concrete stabilized, but instead will merely be dewatered tailings, or raw tailings.

² The term "cut and fill method" should be applied loosely here. There are an infinite number of variations on the cut and fill method, and an appropriate variation would have to be chosen for more careful evaluation after some consideration. However, the basic applicability of the method should not be summarily dismissed, as the Forest Service has done in the DEIS.

118.7

The mere existence of an alternative does not make it reasonable. Expenditures estimated for backfilling of this magnitude do not meet the reasonableness test, especially in light of the existence of more reasonable alternatives that address the same scoping issues.

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However, concrete stabilization of tailings changes the analysis. Concrete stabilized tailings essentially become a competent part of the wall rock, and mining can take place around, and with some limitations, below this fill. Greens Creek Mine on Admiralty Island uses concrete stabilized tailings as backfill, and is now putting nearly 50% of its tailings back into the mine as stabilized backfill without any sorting of the tailings prior to concrete stabilization. Consequently, two of the reasons cited in the DEIS for dismissing cut and fill as technically inappropriate -- ore deposit width and limited competent wall rock, and unknown extent of the ore deposit at depth -- DEIS at 2-20, are not valid if concrete stabilization is considered. The third technical consideration, "erratic occurrence of gold in the ore zone," *id.* is inappropriate because the problem can actually be better handled by a cut and fill mining approach. One of the problems with bulk caving is dilution of the ore with wall rock. A cut and fill approach is much more selective, and the resultant grade of the ore mined is higher, minimizing the throughput of waste rock in the mill.

The other three reasons cited by the Forest Service for dismissing cut and fill mining are based on economic considerations. However, the Forest Service cannot eliminate an alternative from consideration simply because it may be more expensive than the company's proposal. In determining the scope of alternatives that must be considered in an EIS, NEPA requires the agency to look at what is objectively feasible rather than what a particular project proponent is capable of carrying out. Thus, the Forest Service must consider a number of operational alternatives despite their cost, including the cut and fill mining method.

Moreover, cut and fill might actually be an economically viable method if concrete stabilization of the backfill is considered. On the positive economic side is the fact that ore grades are enhanced, and mill throughput can be more carefully controlled. The public should also be aware of the benefits of selecting a mining method which would allow the redeposition of a significant amount of backfill into the mine.³

³ In the summary of partial backfilling of tailings, DEIS at 2-25, the Forest Service should explain that, in addition to placement of tailings that have been dried and separated into coarse and fine fractions, the whole tailings fraction, without separation, could be placed underground if mixed with concrete, as is done at the Greens Creek Mine on Admiralty Island. The only additional economic factor, other than those already discussed (drying and handling) is the cost of the cement.

118.8

Cut and fill concrete stabilization would also lend itself well to dry tailings disposal for the portion of the tailings that could not be backfilled. Thus a far smaller footprint area of wetlands would be disturbed for tailings disposal.⁴

The Forest Service must also consider alternatives that will eliminate or minimize the adverse impacts of the project. One of the main concerns about this project is the discharge

118.8

Please see response no. 100.3.

⁴ As the DEIS admits, the use of dry tailings as a disposal method has a number of advantages including:

- (1) less impact on wildlife, DEIS at 2-53;
- (2) no impact on stream channels, *Id.*;
- (3) 15% less surface area disturbance than the preferred alternative, *Id.*;
- (4) no direct loss of freshwater or anadromous fisheries due to tailings disposal. *Id.* at 2-50;
- (5) 70% reduction in the amount of water to be discharged to the marine environment. *Comparative Assessment of Wet and Dry Tailings Disposal*, Knight and Piesold, *Ltd.*, and Steffen, Robertson and Kirsten, May, 1991, Figure A-18;
- (6) less disturbance of wetland and old growth habitat than the other alternatives, DEIS at 4-53;
- (7) Dry Tailings site B would have less noise impact on mountain goat and black bear than the preferred alternative, DEIS at 2-53, Table 2-5;
- (8) it renders the wastewater discharge more amenable to treatment because the concentration of water borne contaminants to be treated from dry tailings runoff is lower than with effluent from wet tailings facility; and there is less effluent volume to treat.

Moreover, Forest Service regulations require that

"All tailings, dumpage, deleterious materials, or substances and other waste produced by operations shall be deployed, arranged, disposed of or treated so as to minimize adverse impacts upon the environment and forest surface resources."

36 CFR § 228.8(c). This means that the Forest Service must require Kensington to use the tailings disposal method that results in the least adverse impact to both surface and nonsurface resource, such as the marine and freshwater environment. Dry tailings disposal and backfill would meet that requirement.

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The Forest Service must also consider alternatives that will eliminate or minimize the adverse impacts of the project. One of the main concerns about this project is the discharge of mill effluent which contains high levels of chemicals and metals, into a location in the marine environment in that supports a valuable gillnet fishery. This impact could be avoided by considering ways to treat the tailings pond effluent so that state water quality standards are met at the end of the pipe and a mixing zone is not needed. In addition, some of the potential impacts on the fishery could be avoided by moving the outfall location south of Point Sherman.

Another adverse impact which, as discussed below, is not adequately assessed in the DEIS, is the risk of a discharge of high levels of residual chlorine from the cyanide destruct process. This residual chlorine can be extremely toxic to fish. The Forest Service must consider using alternative cyanide destruct processes. There is no indication that the hydrogen peroxide cyanide destruct process is not feasible. This process is being used increasingly by mining companies, in part because it results in far fewer byproducts. Greens Creek mine recently switched from alkaline chlorination to hydrogen peroxide and a number of mines in Canada have recently switched as well.

The Forest Service also does not consider an alternative to the withdrawal of water from upper Sherman Creek for the mill and domestic uses. The Alaska Department of Fish and Game has repeatedly expressed concern that lower Sherman Creek could be dewatered during low flows. The Forest Service acknowledges that Sherman Creek may not provide sufficient water during low flows and suggests that mine drainage water could be used as make-up water. However if mine drainage can be used for some of the water, there is no reason it cannot be used for all of the domestic water needs. According to the DEIS, mine drainage will be approximately 1,000 gpm, DEIS at 4-13, which is more than enough to meet domestic demand at 57 gpm plus mill requirements of 21 gpm. *Id.* Such an alternative would eliminate one of the major impacts on Sherman Creek. The Forest Service must consider this as an alternative.

C. THE DEIS FAILS TO ASSESS ADEQUATELY ALL POTENTIAL IMPACTS

The DEIS ignores a number of potential impacts Kensington's proposed project will cause, and, for some impacts which are assessed fails to do so adequately.

Perhaps most significantly, the use of alkaline chlorination to reduce the level of cyanide has not been adequately assessed. Alkaline chlorination is the process that has been

118.9

Please see response no. 86.4.

118.10

Please see response no. 93.12.

118.11

Mine drainage water will be used as process makeup water. Existing data indicates that mine drainage could not be used as the domestic water supply. Thus, a limited volume of water will be required from Sherman Creek for domestic use except when low flow restrictions are in force.

118.12

Please see responses no. 86.4, 93.12, 93.52, and 117.69.

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selected by Kensington to reduce the cyanide introduced to extract the gold from the gangue minerals. In order to ensure effective reduction of the cyanide, an over-saturation of chlorine is usually employed, which means that large amounts of residual chlorine may be present in the process waters. Free chlorine is itself potentially as harmful to aquatic life as the cyanide that it is used to destroy. In fact, the state applicable standard for chlorine is the limit of 1 ug/l that is assigned to cyanide. ADEC, Excerpts from the Alaska Water Quality Standards Workbook, at Part II, Table 1, pp. 7, 9 (July, 1991). The DEIS contains no calculation of the amount of residual chlorine that will remain in the mill effluent, or the amount in the discharged into Lynn Canal.

The DEIS must thoroughly assess the use of alkaline chlorination including at least:

- (1) a thorough description of the alkaline chlorination process, including the various by-products of the chemical reaction with the cyanide;
- (2) a calculation of the amount of residual chlorine, and accompanying by-products, which will remain in the effluent after the cyanide destruct process;
- (3) a detailed description of potential treatment measures to remove excess pollutants.

In addition, the alkaline chlorination process is extremely pH sensitive. However, maintaining the proper pH level at the Kensington site may be impossible. The Greens Creek mine has had difficulty maintaining the proper pH level in its tailings pond in part because of the organic acids in the muskeg which drains into the tailings pond. The area of the proposed tailings pond at Kensington includes a large amount of muskeg. The potential difficulties in maintaining the proper pH level and the impacts that will occur if pH is not consistently maintained, must be thoroughly assessed in the DEIS.

The DEIS also fails to include data on total suspended solids in the tailings pond and discharge. According to the DEIS, projections for the amount of Total Suspended Solids (TSS) were simply not made. DEIS, at 4-28. Because suspended solids have the potential to carry a significant amount of toxic material into Lynn Canal, and because New Source Performance Standards limit the amount of suspended solids that can be discharged into receiving waters, the potential discharge of TSS from the milling process into the tailings pond, and the level of potential discharge into Lynn Canal, must be calculated. In addition, the DEIS must assess the potential impact of these solids on benthic organisms and other aquatic life.

118.13

Please see responses no. 86.4, 93.12, 93.52, and 117.69.

118.14

The discussion of total suspended solids has been updated in Chapter 4 of the FEIS based on additional data developed since the publication of the DEIS. Also see responses 86.9, 93.46 and 93.74.

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Moreover, since it is likely that treatment of the discharge will be necessary in order to meet New Source Performance Standards, the potential treatment methods must be discussed in the DEIS along with an assessment of the potential effects from the use of flocculents or other processes that might be used.

The DEIS also fails to adequately assess the use of water during the project. Specifically, the DEIS fails to discuss whether during low flow periods sufficient water will be maintained in Sherman Creek to protect instream resources, and whether mine drainage water could be used as a source of water for domestic and mill uses rather than utilizing water taken from the upper Sherman Creek diversion dam.

The DEIS admits that the effects of the water withdrawals, combined with the loss of water due to the construction of the tailings dam, may have an adverse effect on fish life in Sherman Creek. DEIS at 4-36, 4-38. However, no value for minimum in-stream flow is provided. This figure must be determined and included in the DEIS.

In addition, although the DEIS describes the partial use of mine drainage for makeup water for the mill, DEIS at A-25, Figure A-18 and 4-20, Figure 4-6, it fails to explain why mine drainage could not be used to provide the total amount of water required for mill operations. As discussed above, use of mine drainage for total mill and domestic uses must be considered.

The DEIS fails to assess some significant potential impacts to wildlife. For example, the DEIS totally ignores the potential for the tailings pond to attract migratory birds, and the potential impact on those birds which contact toxic substances in the pond.

In addition, the DEIS fails to meaningfully assess potential noise impacts. The use of urban sounds as a comparison to the level of noise that will be generated is inappropriate. Many people would probably consider a vacuum cleaner to be extremely disturbing in a wilderness setting. The DEIS should describe noise as the percentage increase over pre-mine background noise.

Finally, the assessment of socioeconomic impacts ignores two significant potential impacts. First, the DEIS fails to assess the potential impact to the fisheries industry from a violation of the NPDES permit limits. It is well known that the mere perception that fish may be tainted will adversely affect the market for fish products. Second, the DEIS fails to assess the impact on recreation areas and uses due to the increased population which will result from the mine operation. These impacts must be analyzed and included in a revised draft EIS.

118.15

Please see response no. 99.28.

118.16

Please see response no. 99.28.

118.17

Please see responses no. 117.25, 117.88, 117.180 and 118.11.

118.18

The DEIS, on page 4-52 addresses the potential toxicity of projected cyanide levels in tailings pond waters to wildlife landing on or drinking from the tailings pond. This discussion has been expanded in the FEIS to address other potentially toxic substances occurring in the tailings pond waters.

118.19

The inclusion of noise examples in the DEIS was intended to provide a frame of reference that most people would be familiar with so that they could get a relative feel for noise increases in terms that are meaningful to them. Noise is measured on a logarithmic scale that is difficult to grasp. Attempts to go one step further and convert the noise increases to percentages would further confuse the issue.

118.20

The Forest Service finds no deficiencies in the DEIS large enough to warrant supplementing the draft EIS and has prepared an FEIS. See also responses no. 93.65, 93.67, 86.11 and DEIS at page 86.11.

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D. THE DEIS FAILS TO ADEQUATELY ASSESS CUMULATIVE IMPACTS

NEPA requires that an EIS discuss the incremental impact of a proposed project in addition to all "past, present and reasonably foreseeable future actions." 40 C.F.R. § 1508.7. The discussion of cumulative impacts in the DEIS is inadequate in several respects. First, the Forest Service fails to discuss the effects of the proposed Windy Craggy mine and socioeconomic impact on Juneau of that mine along with the present impact on Juneau of the Greens Creek mine, the impact of the proposed Greens Creek expansion, and the potential effects of all the mines closing simultaneously as a result of depressed minerals prices.

Moreover, the DEIS fails to discuss the cumulative impact of the proposed mining project when added to past exploration activities. Instead, the Forest Service has included exploration activities as part of the baseline. However, exploration activity has already affected resources in the area. For example, the DEIS admits that past exploration activity may have already significantly affected mountain goats in the area by displacing them from prime winter habitat in and around the mine site. The DEIS must include a discussion of these impacts in its cumulative impact assessment.

Finally, the DEIS fails to consider the cumulative impact of past and ongoing exploration activities at the Jualin mine.

E. THE DEIS FAILS TO ADEQUATELY ASSESS POSSIBLE MITIGATION MEASURES

NEPA requires that an EIS discuss measures, including design alternatives, to reduce or eliminate the range of impacts of the proposal. The DEIS fails to do so. The DEIS devotes a mere two pages to mitigation, which merely lists categories of impacts and general measures to mitigate those impacts. This is totally inadequate to meet NEPA's requirements.

In addition, NEPA requires the Forest Service to do more than simply list possible mitigation measures. It must also discuss the effectiveness of measures discussed.

Moreover, the DEIS fails to discuss measures to mitigate several of the project's major impacts. For example, it fails to discuss possible treatment of the effluents to mitigate

118.21

The proposed Windy Craggy Mine is not likely to cause a major cumulative impact in the Juneau area. Workers associated with the movement of supplies and concentrate through Haines would live in the Haines area and workers at the mine in Canada would be Canadian. Therefore, the mine is not considered in the analysis of reasonable foreseeable cumulative impact projects. Please see response no. 94-29 for consideration of the Green's Creek Mine.

118.22

It is not stated in the DEIS "that past exploration activity may have significantly affected mountain goats in the area by displacing them from prime winter habitat in and around the mine site." On page 3-39 of the DEIS it is stated that "It is also possible that past mining and exploration in the area have caused goats to shift to habitats more distant from these activities." The DEIS also recognizes (on page 4-54) that "additional displacement caused by mine development would result in cumulative impacts to the Lions Head mountain goat population," if past displacement has occurred.

Although past mining and exploration activities may have displaced mountain goats, it is impossible to go back in time to determine the actual occurrence or magnitude of this displacement. Mining activity has occurred in this area off and on since the late 1800s. Preliminary results of recent ADF&G monitoring of mountain goats in the Lions Head Mountain area indicate that these activities may have displaced mountain goats from potentially suitable winter habitat above the mine site. However, the effects of this displacement on the local mountain goat population are unknown. Current ADF&G population estimates derived from onsite aerial surveys are consistent with carrying capacity projections derived from the HSI model for habitats in the study area.

118.23

The wildlife discussion on cumulative impacts has been expanded in the FEIS to include past and ongoing exploration activities at the Jualin Mine.

118.24

Please see response no. 93.3.

118.25

The expected effectiveness of mitigation measures are factored into the discussion of impacts in Chapter 4 of the FEIS. No impacts from the tailings pond to migrating birds are expected. The pond water will contain no known constituents above toxic levels for birds.

Wetlands mitigation will be required and stipulated by the U.S. Army Corps of Engineers under the authority of Section 404 of the Clean Water Act. The Corps will not act on the permit until the FEIS identifies the preferred alternative.

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potential impacts on Lynn Canal, and fails to discuss measures to mitigate the potential impacts the tailings pond will have on migratory birds. In addition the DEIS fails to discuss mitigation for the loss of wetlands caused by the project, as required by applicable regulations. Mitigation for these and all other impacts must be thoroughly assessed in the DEIS.

118.25

F. THE RECLAMATION PLAN VIOLATES FEDERAL, STATE AND LOCAL REGULATIONS

Applicable Forest Service regulations require a plan of operations to include a reclamation plan. 36 C.F.R. § 228.4(c)(3). That plan must include measures to rehabilitate fisheries and wildlife habitat as well as reclaim surface resources. *Id.* § 228.8(g). The "conceptual" plan prepared by Kensington Venture addresses only surface reclamation measures. No mention is made of measures to restore the fisheries productively of Sherman Creek for example. Moreover, Forest Service regulations authorize the agency to require reclamation to take place during operations. *Id.* The Kensington Venture's mineral claims are located in an area classified as LUD II by the Forest Service which means the area is to be managed "... in a roadless state to retain their wildland character." Thus, in order to retain the wilderness character of the area to the greatest extent possible, the Forest Service must require reclamation to be ongoing throughout the life of the mine. Ongoing reclamation is applicable to the restoration of areas disturbed by road building (i.e. reclamation of all non road-surface areas), of the face of the tailings dam as it is built in lifts, and in mitigating the effects of the destroyed wetlands and stream habitat as construction of the facility proceeds.⁵

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118.26
Please see Chapter 2 of the FEIS for an expanded discussion of mitigation measures.

In addition, the City & Borough of Juneau, which will rely on the EIS in its decision making process, requires that detailed information on reclamation be submitted before it can grant a large mine permit. Specifically, an application for a large mine permit must contain "a description and timetable of proposed reclamation of affected surface." CBJ Code 49.65.130(b). The mining ordinance also outlines more detailed requirements of the

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The EIS is not an approval document for the CBJ Large Mine permit process, and may not satisfy all requirements for the permit.

⁵ The discussion of the one reclamation project that is included in the DEIS, routings for Sherman and Ophir Creeks after closure, is confusing at best. The DEIS states that Ophir Creek will remain in the diversion channel after mine closure, DEIS 4-39, but in other places states that the Ophir Creek diversion, as well as the Sherman Creek diversion would be removed. *Id.* at A-23, 2-10. This must be clarified.

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reclamation measures to be performed. See *id.* at 49.65.135. It is impossible to evaluate the requirements outlined in this section without the detailed information that would be required in a reclamation plan.

118.27

Moreover, Alaska statutes require a reclamation plan for an operation like the Kensington prior to commencing the project. AS 27.19.030. Draft regulations issued for implementation under this statute are currently undergoing public comment and are due to be implemented by October 15, 1991. These regulations call for the submission of a reclamation plan 45 days prior to the start of any proposed mining activity. Thus, the Kensington Venture will have to meet the conditions of these regulations since it is unlikely the mine will have all of its permits approved before that date.

118.28

G. THE DEIS FAILS TO MEET THE REQUIREMENTS OF § 810 OF ANILCA

Section 810 of the Alaska Lands National Conservation Act (ANILCA) requires the Forest Service to evaluate whether the proposed mine project affects subsistence resources and uses. 16 U.S.C. § 3120. Specifically, § 810(a) requires the Forest Service to evaluate the effect of the proposal on subsistence use and resources, the availability of other lands for the proposed mine development and alternatives which would reduce or eliminate the use of lands important for subsistence. The DEIS fails to meet these requirements.

Significantly, the Forest Service ignores existing information on subsistence uses. Studies conducted by the Subsistence Division of the Alaska Department of Fish and Game and the 1988 Tongass Resource Use Cooperative Study (TRUCS) document subsistence use of salmon and other finfish by residents of Haines, Klukwan and Skagway, and use of deer near Point Sherman by Haines residents. This information is inexplicably absent from the DEIS. See DEIS at 3-83 to 3-84. These subsistence uses could be adversely affected. The DEIS admits that herring, herring roe and halibut in the Point Sherman area have been designated as subsistence resources. *Id.* at 3-84. However, the DEIS fails to thoroughly evaluate the effects on these species, as well as other species used for subsistence such as salmon and eulachon.

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Thank you for the summary information.

118.29

Please see the FEIS for an expanded discussion of subsistence issues.

At a minimum, the DEIS must assess the effects of the adverse deposition of solids in the tailings pond effluent as well as the potential impacts to all migratory species of fish from accidental spills of chemicals, a breach of the tailings pond, and the likely exceedence of NPDES permit limits for the tailings pond discharge. In addition, competition for

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subsistence resource must be assessed as well as cumulative impacts from other activities which adversely affect subsistence in Haines, Skagway and Klukwan.

H. THE TAILINGS DAM DOES NOT YET MEET STATE DESIGN STANDARDS

Application of the proper design criteria for the tailings dam includes three considerations: first, the proper study must be used to establish the magnitude of earthquake events that could be expected at the site of the tailings dam; second, a sufficient analysis must be done to define the design basis earthquake; and third, the proper State classification must be assigned to the dam. None of these three factors has been met and therefore the tailings dam does not meet state design standards.

1) The Maximum Credible Earthquake Has Not Been Properly Assessed.

The DEIS relies on two studies in establishing the maximum credible earthquake (MCE) for the Kensington dam site. The first is a study by Geomatrix Consultants, Fault Study, Echo Bay Mines - Kensington Mine Project, (May 1988); and the second is a report by Stephen, Robertson and Kirsten, Inc. & Woodward-Clyde Consultants, Geologic, Geotechnical, and Hydrologic Investigations, Sheep Creek Tailings Dam, AJ Project, (Mar. 1990). The SRK/WCC report performed a detailed analysis of the possible occurrence of seismic events for the AJ tailings dam. In contrast, the Geomatrix report was primarily of a geotechnical nature, and did not involve the detailed seismic modelling that was contained in the SRK/WCC report. However, it appears that because seismic modelling is lacking for the Kensington site, the data in the SRK/WCC report is being used to establish the potential magnitude and frequency of a "floating earthquake" at the Kensington site. According to Woodward-Clyde Consultants, the scope of the SRK/WCC study was limited to the AJ site, and it is indeed possible that earthquakes of somewhat larger magnitude could occur at Kensington. Personal communication, Ivan Wong, WCC (July 22, 1991). The Forest Service must review the data used in determining the maximum credible floating earthquake, and require an appropriate study, if necessary, before the MCE is established for the Kensington dam site.

118.30

See responses no. 87.6, 93.33, and 100.18.

The State of Alaska, Dam Safety Engineer has independently reviewed the earthquake design parameters developed by the design engineer. Modifications to the Maximum Credible Earthquake (MCE) have been made to account for earthquakes which may be generated on existing faults (Chatham Strait Fault System, Fairweather Fault System) and resulting from a floating or random earthquake at the site. The earthquake source capable of generating the greatest acceleration and least favorable resonant frequency will be used in developing seismic design parameters.

The design engineer has utilized commonly acceptable, state-of-the-art seismic design techniques to analyze dam stability. Soil amplification computer programs (SHAKE) which simulate seismic effects throughout the dam have been used to determine design accelerations at various critical levels.

It is the responsibility of the State of Alaska, Dam Safety Engineer to assign the proper Hazard Classification for the Kensington tailings dam and not a function of the NEPA process.

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2) The appropriate Source for the Maximum Credible Earthquake Has Not Been Assessed

There are potentially three sources for earthquakes at the Kensington site. The first would be a "floating earthquake", which is a crustal earthquake that occurs along a local fault or in the crust in the immediate vicinity of the dam site. The second would be an earthquake along the Chatham Strait Fault system, which would be expected to generate earthquakes larger than the local floating earthquakes that might occur at the dam site, but also occurring at a greater distance than a local earthquake, with accompanying attenuation of the ground displacement. The third source would be a very large event along the Fairweather Fault System. This would be the largest of the potential events, but also the most distant.

The propagation of seismic energy is frequency dependant, with low frequency energy going farther (less attenuation) than high frequency energy. All dams have resonant frequencies, i.e. a frequency at which the dam will tend to reverberate like a guitar string. If the dam is excited at this frequency, it is much more likely to fail than if the exciting energy is predominantly of higher or lower frequency content. The Kensington dam, because of its large size and the relatively low acoustic velocity of the construction materials, will have a low resonant frequency, and will therefore be more susceptible than a concrete structure of the same size to distant earthquake sources. Therefore, it is possible that a larger event, located at some distance from the dam site, might actually have more potential for destroying the dam than a local event. A thorough analysis of which of these three sources will generate the greatest ground motion needs to be performed.⁶

3) The Proper State Hazard Classification Has Not Been Assigned to the Dam

The calculations that have been performed to date have assumed that the dam will be designated a Class III structure by the State. A Class III is the least restrictive category that can be assigned. See 11 AAC 93.157. In order to receive this designation, a number of criteria must be met. The Kensington Venture has not satisfied these criteria.

⁶ This deficiency has also been pointed out in a recent letter from EBA Engineering Inc., Lance Duncan, P.E., July 24, 1991, to Echo Bay Mines, as part of the State's Kensington Dam Design Review.

118.31

The issues raised in your comment are important and we note that the State dam safety approval process is addressing them. See also response no. 118.30.

118.31

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September 3, 1991
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The criteria that must be met in order to allow the designation of the dam as a Class III structure are summarized in a letter from EBA Engineering Inc., Lance Duncan, P.E., responding on behalf of the State of Alaska, to Echo Bay Mines, July 24, 1991.

... However, use of less than the MCE (Maximum Credible Event, called MDE in the A-J report) local event for design mandates that the potential inundation area downstream of the dam, the dam itself, and the impoundment area below high water line (which includes all tailings surface area both before and after decommissioning) be permanently and irrevocably zoned, withdrawn, and otherwise designated as a safety zone, with no allowance of structures, development of facilities for occupancy of use, or other development which would introduce risk of life (other than from occasional access by plant maintenance personnel servicing outlet works), or of property not belonging to the mine and directly related to the operation and maintenance of the dam and outlet works. Failure to achieve such withdrawal would affect the classification of the structure as "Low Risk", or Class III, under 11 AAC 93.157, and thereby require more stringent design criteria.

Id., p. 3. Because these factors are essential to the proper classification, the DEIS must discuss the safety of the mine's shore based facilities near the mouth of Sherman Creek (i.e. are these facilities in the floodplain?).

The letter continues:

Evidence of formal withdrawal of the area and zoning and posting by Echo Bay, the Borough of Juneau and the U.S. Forest Service is required for this to be considered an acceptable alternative. A second proviso for this to be an acceptable approach is that Echo Bay must furnish evidence of issuance of the previously discussed determination and/or written concurrences from the applicable environmental agencies (Alaska Department of Environmental Conservation, Alaska Department of Fish & Game, U.S. Environmental Protection Agency, U.S. Fish & Wildlife Service, etc., as applicable to their respective jurisdictional and administrative authorities) that the impounded tailings and decant water are not considered hazardous to toxic substances. A third requirement is submittal of written determination from the Alaska Department of Fish & Game that the creek area downstream of the dam to the confluence with Lynn Canal is not an "important salmon spawning habitat" as called out in 11 AAC 93.157(2).

Id. p. 3. Discussion of the three points mentioned in this paragraph, (1) withdrawal of the area, (2) certification that the tailings and decant water are not hazardous and toxic, and (3) determination that Sherman Creek is not an "important salmon spawning habitat" as they

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118.31 { apply to determining critical design parameters used to insure the safety of the dam, must
be thoroughly assessed in the DEIS.

I. MISCELLANEOUS ERRORS

We note the following errors and omissions in the DEIS:

1. Page 1-9

The DEIS fails to mention that a solid waste permit from ADEC is required for the disposal of mine tailings.

2. Page 5-12

The third paragraph incorrectly lists the number of acres of wetlands disturbed by Alternative E as 105 to 145. We believe this should be 77 to 105 acres. See Table 4-15, p. 4-42.

3. Page 4-15

In the 5th paragraph; "A 120 to 1 dilution of tailings pond effluent would be required to meet the acute toxicity criteria for lead." Table 4-11, p. 4-29 states the required dilution is 23:1. Which figure is correct?

4. Page 4-23

The second paragraph references Appendix D, Table D4-8 and Table D4-7. The correct reference is to Tables D2-8 and D2-7 respectively.

5. Table 4-11, page 4-29

Chronic criteria for Alaska should be used. This data is available from ADEC in the publication Excerpts from the Alaska Water Quality Standards Workbook, ADEC Water Quality Management, Juneau, July 1991. For these values, Cu, Ag, and CN chronic values are assumed to be equal to acute.

118.32

Thank you for pointing out these discrepancies. The correct dilution value for load is 23 to 1 as shown in Table 4-11. We have reviewed the document for consistency per your comment.

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6. Table 4-23, page 4-68

The table should include a total for the bottom line of the table, "Community Net Gain (Loss)." This would show a total net loss to the community, over the life of the project, of \$883,000.

CONCLUSION

As discussed above, the DEIS fails to meet the fundamental purposes and requirements of NEPA. Therefore, the Forest Service must remedy the deficiencies in the document and reissue a revised DEIS for further public comment.

We appreciate the opportunity to comment and hope that our comments will be helpful to you.

Sincerely,

Marlyn J. Twitchell

Marlyn J. Twitchell
Associate Attorney

David M. Chambers

David M. Chambers
Mining Analyst

cc: Southeast Alaska Conservation Council
Lynn Canal Conservation
Juneau Group, Sierra Club
Debra Donahue, National Wildlife Federation
City & Borough of Juneau Planning Commission

ZARUBA & ASSOCIATES, INC.

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September 3, 1991

119

JUNEAU
RANGER DISTRICT

Mr. Kenneth E. Mitchell, District Ranger
United States Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

Re: Comments - Draft Kensington Venture EIS

Dear Mr. Mitchell,

We have had an opportunity to review the draft EIS for the Kensington Venture dated June 1, 1991 and wish to comment on the proposed transportation plan as articulated in Chapter 2 of that document.

While it is not our intent to second guess the authors of the draft document, it occurs to us that the scenarios outlined for passenger and light freight transportation to the mine have failed to consider what we feel to be the safest, most reliable, economically sound and environmentally sensible surface transportation route available. That being a route from a small marine terminal at Echo Cove to a terminal on the north shore of Berners Bay located at either West Slate Creek Cove or at the existing Jualin terminal site in East Slate Creek Cove.

A small terminal facility could be constructed on privately owned lands on the northeast shore of Echo Cove which would provide for a small vessel moorage, terminal building and parking area for mine employees.

A terminal building, parking area, and driveway (connecting the end of Glacier Highway to the terminal) could be designed in such a manner so as to minimize negative environmental impact to the area and be naturally screened from public view.

By developing a terminal at Echo Cove, long term safe and reliable daily transportation could be provided not only for the Kensington, but could also service future operational requirements at the Jualin mine eliminating the necessity to revisit issues related to development of a separate transportation system for that mine.

119.1

Thank you for the summary information.

Problems associated with long unreliable vessel transits from Auke Bay due to weather in Lynn Canal, vehicle parking congestion at Auke Bay or the Juneau Airport, and the requirements for the maintenance of large long term storage and housing facilities at the Kensington and Jualin could also be alleviated to a great degree.

In April of 1990 we were asked to conduct a Vessel Transportation Analysis which would address the "...operational feasibility and estimated costs associated with vessel transportation from Juneau to the Kensington Mine...". The following is an excerpt from that study:

"BASIC CONCEPTS OF OPERATION

Assumptions:

1. With the exception of passenger health and safety, the rigid adherence to regular transit schedules and minimum transit times are to be of first priority to Echo Bay and the transportation contractor.
2. The vessel(s) utilized will be dedicated to Echo Bay service only, and as a result should be configured and equipped to provide passenger, freight, ambulance, and other duties as required.
3. The vessel(s) must be immediately on call and capable of safe all weather operation on a 365 day per year basis.
4. The vessel(s) will be manned by licenced Merchant Marine Officers and crew as required by the Office of Marine Inspection, inspected by the United States Coast Guard, and maintained in serviceable and inspected condition during the contract period.
5. The contractor, the vessel(s) and crews must be insured for hull and machinery, Ichmaree, public liability to the value of the replacement value of the vessel(s).
6. The contractor will carry a minimum of \$10,000,000.00 passenger liability insurance coverage, and provide financial responsibility and pollution coverage as required by the United States Coast Guard...".

"...Auke Bay to Slate Creek:

The weather in Lynn Canal is some of the most severe and unpredictable in Southeast Alaska. During winter months (October thru March) high wind and sea conditions are quite common and from November through February heavy vessel icing conditions are routinely encountered.

Transit times, fuel consumption, and passenger health and safety will be heavily impacted by weather during year round operations over this route.

The vessel(s) required to service this route will have to be capable of high speed operation (20+ Kts.) in seas of up to 8', moderate speed operation (12 - 14 Kts.) in seas of up to 12', and low speed operation (8 Kts.) in seas above 12', during periods of low vessel icing.

In order to insure passenger safety, and minimize passenger discomfort, voyage delay or disruption due to weather conditions, we would anticipate utilization of a steel monohulled vessel(s), approximately 120' x 25' x 12', of over 2000 shp configured to accommodate over 80 passengers, equipped with emergency medical equipment for transportation of up to twenty patients, and be additionally capable of transporting containerized cargo.

Transit time estimates, one way:

- a. Normal Operation - 2 to 2.5 hrs.
- b. Moderate Weather - 3.5 to 4 hrs.
- c. Heavy Weather - 5.5 to 7.5 hrs...."

"...Echo Cove to Slate Creek:

While the Echo Cove to Slate Creek Cove route is subjected to similar wind and icing conditions present in Lynn Canal, this route is for the most part protected from Lynn Canal sea conditions.

Due to this route being across the mouth of Berners Bay, which is fed by the Berners River and Cowee Creek, during the winter months surface ice will most certainly be encountered. A vessel operating on this route will be required to break ice when these conditions are present.

The vessel(s) required to service this route will have to be capable of high speed operation (20+ Kts.) in seas of up to 6', and low speed operation (8+ Kts.) through surface ice.

We would anticipate utilization of a steel ice class mono-hulled vessel(s), approximately 90'x 22'x 6' of over 2000 shp configured to accommodate over 80 passengers, equipped with emergency medical equipment for transportation of up to twenty patients, and additionally capable of transporting cargo.

Scheduled 365 day service can be guaranteed over this route during all weather conditions with little if any negative impact on transit times, fuel consumption, or passenger comfort.

Transit time estimates, one way:

- a. Normal Operation - .25 hrs. to .33 hrs.
- b. Moderate Weather - .33 hrs. to .5 hrs.
- c. Heavy Weather - .33 hrs. to .5 hrs.
- d. Surface Ice - .5 hrs. to .75 hrs....."

"...CONCLUSIONS:

Transit of Lynn Canal during the winter months cannot be guaranteed. While we feel the vessel we have specified will be able to transit this route in almost all cases, there are times at which no vessel can make the transit. Even the State ferries (which are in excess of 350') have been forced to "lay in" waiting for weather in the canal.

Another matter that needs to be seriously evaluated when considering the Lynn Canal route is passenger comfort. While crews and vessels can safely make this transit in heavy weather, for the most part the passengers can be expected to experience discomfort ranging from mild nausea to total disability as a result of one of these passages. We would assume Echo Bay Mines would want their employees motivated and able to work when arriving at the Kensington site.

In our opinion, uninterrupted services with a minimum of passenger discomfort can be guaranteed by utilizing the Echo Cove/State Creek route.

Transits can be consistently made in well under one hour regardless of weather conditions. This should not only reduce Echo Bays overhead related to transit pay for their personnel, but will offer alternative emergency ambulance services during darkness or inclement weather which precludes air evacuation of injured personnel.

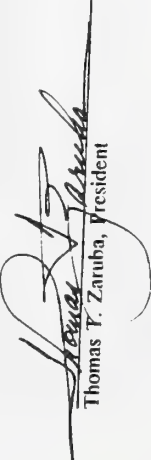
In either case, because of overall safety, consistency of operation, winter icing conditions of the vessels, wind loading, heavy sea keeping ability, and the potential necessity of ice breaking in Berners Bay, we have selected steel mono-hull low profile high speed vessels as our preference...."

We believe the creation of a surface transportation route between Echo Cove and North Berners Bay would:

1. More closely integrate the Kensington and Jualin Ventures into the Juneau community,
2. provide safe, reliable and cost effective transportation for Juneau citizens employed at the mines,
3. allow immediate access for mine personnel to Juneau emergency services,
4. minimize negative environmental impacts related to the development and operation of transportation support services for the mines,
5. and greatly reduce the potential for accidents caused by adverse climatic conditions which routinely impact the Juneau area.

Thank you for providing us the opportunity to comment on the draft EIS. If we can provide any further comment or if you have any questions, please feel free to contact us.

Very truly yours;



Thomas T. Zaruba, President

COPY



United States Department of the Interior

OFFICE OF THE SECRETARY

Office of Environmental Affairs
1609 C Street, Room 119
Anchorage, Alaska 99501-5126

ER 91/755

SEP 26 1991

Kenneth E. Mitchell
District Ranger
Juneau Ranger District
8465 Old Dairy Road
Juneau, Alaska 99801

Dear Mr. Mitchell:

In response to your June 28, 1991, request, we have reviewed the Draft Environmental Impact Statement (DEIS) for the Kensington Gold Project. We offer the following comments for your consideration. General comments are provided below; specific comments are included in Attachment 1.

General Comments

We believe additional baseline biological studies are needed to accurately determine the proposed project's potential environmental impacts and as a basis for monitoring and reclamation planning. We would be pleased to work with you in the identification of these studies. Until such baseline information is available, we believe the analysis and description of potential project impacts on fish, wildlife, and their habitats is incomplete.

The DEIS indicates that effluent standards for this project would include a mixing zone. We believe that upland treatment should be included and analyzed as an alternative in the EIS. We also believe that alternative discharge locations should be included and analyzed in the EIS.

According to the DEIS, the potential accumulation of metals in sediments adjacent to the discharge area is expected to be significant. Based on a discharge of 2,500 gallons per minute (gpm) and the Average Pond Effluent Mean (Table 4-9), the estimated discharge is 0.41 kilograms (kg)/day (146 kg/year) copper, 0.71 kg/day (252 kg/year) lead, 0.028 kg/day (10.1 kg/year) silver, and 0.26 kg/day (90.1 kg/year) cyanide. In addition, an undetermined quantity of chlorine, spent reagents, nitrogen compounds, and cyanide products are to be discharged. Given the amount of contaminants discharged, we believe that the potential for harm to all organisms in the discharge area is considerable and should be addressed in the EIS.

120.1

Please see the FEIS for an expanded discussion of alternative discharge locations. See also response no. 4.5.

120.2

120.2 The subject of metals deposition in the general area has been given greater attention in the FEIS (see Chapter 4). This matter was also addressed in a review of bioaccumulation as it relates to the project by Kessler and Vigers (1992).

The DEIS indicates that large volumes of fuel and hazardous substances would be used at the project site, which necessitates frequent year-round fueling and offloading operations. We assume that a comprehensive, all-weather, spill-prevention and cleanup plan, including provisions for oil and hazardous substances expected to be on-site, and acquisition and maintenance of equipment and materials necessary for execution of the plan would be prepared and implemented prior to project development, assuming project approval.

We believe a more specific presentation of reclamation and closure methods and measures needs to be added in the EIS for each alternative, including the preferred alternative.

We believe that discussions and conclusions about impacts to habitats and wildlife populations in the DEIS are understated and, in many cases, unsupported by relevant references. For example, the full range of potential impacts of the proposed project alternatives on migratory birds is not provided. This information needs to be included in the EIS.

Details on how the proposed project's tailings would be placed in the impoundment and how the resulting contaminated water body would be managed to preclude contact with migratory birds, particularly waterfowl, needs to be added to the project description and impact discussions in the EIS. If contact with migratory birds cannot be precluded, the EIS should describe actions that would be taken in the event of waterfowl or seabird injury or death due to contact with the tailings pond. The EIS should recognize that any migratory bird die-off would require immediate rehabilitation or isolation of the impoundment area.

Based on our information, the destruction of cyanide using the alkaline chlorination technique would result in residual chlorine present in the tailings pond. The more thoroughly that cyanide is neutralized, the more residual chlorine would be present. Therefore, we believe that anticipated chlorine concentrations need to be presented in the EIS. In addition, since chlorine is a highly toxic compound and could destroy aquatic life, the EIS should include a discussion of the discharge of chlorine into the Lynn Canal and possible accidental releases into freshwater bodies.

Furthermore, we believe the EIS should address how the saltwater Water Quality Criteria for chlorine (which are not to exceed 7.5 µg/L 4-day average not more than once every 3 years, and 13 µg/L as a not-to-exceed figure, once every 3 years) would be met upon discharge.

120.3

The EIS discussion of reclamation and mitigation measures for each alternative are adequate to allow a reasoned discussion of the environmental effects of each alternative.

120.4

The discussion on the potential for migratory bird fatalities in the tailings pond has been expanded in the FEIS.

120.5

The impoundment is projected to be non-toxic to migratory birds. Please see response no. 120.4.

120.6

Please see response no. 93.12.

120.3

120.4

120.5

120.6

3


120.7
Helicopters used for transport could disturb nesting bald eagles in the project area. The EIS should address the location of nests relative to helicopter access routes, and how the potential disturbance to nesting bald eagles would be avoided.

120.8
We believe that long-term dewatering of the lower portions of Sherman Creek would have major adverse impacts on fish and wildlife in that watershed. Both Ophir and Sherman creeks would need sufficient water to sustain viable fish, amphibian, invertebrate, and other animal populations. Therefore, an alternate water supply during low-flow periods needs to be addressed in the EIS.

In addition to the above comments, the DEIS contains technical errors, contradictions, and inconsistencies as outlined in Attachment 1. We believe these should be reconciled in the EIS.

We appreciate the opportunity to comment on this document.

Sincerely,


Paul D. Gates
Regional Environmental
Officer - Alaska

Enclosures

120.7

A discussion of potential helicopter disturbance to existing bald eagle nest sites has been added to the FEIS.

120.8

The lower portion of Sherman Creek will not be dewatered by the proposed project. All diverted flows from the upper portion of Sherman and Ophir Creeks will be routed to lower Sherman Creek and discharged back into the stream channel where the natural barrier to salmon migration is located. During low flow periods it is planned that underground mine drainage or groundwater wells would be developed for an alternate water supply source to meet minimum instream flow requirements for aquatic species.

DEPARTMENT OF THE INTERIOR

ATTACHMENT 1

1

SPECIFIC COMMENTS:

120.9	Page 1-1, column 1, paragraph 1. The EIS should contain a discussion of the Plan of Operation for each alternative.
120.10	Page 1-7, column 1, paragraph 2. We believe the project impacts on wetland and floodplain habitats need to be fully described and analyzed in the EIS.
120.11	Page 1-7, column 1, paragraph 4. This paragraph should be revised in the EIS to indicate that the U.S. Fish and Wildlife Service (FWS) also administers the Migratory Bird Treaty Act (16 U.S.C. Section 703-712).
120.12	Pages 2-1 through 2-2. We believe that other alternatives to discharging the effluent into Lynn Canal and storing tailings on site need to be presented in the EIS. In addition, a thorough evaluation of installing a water treatment plant to remove contaminants from the wastewater before releasing it into the environment needs to be included in this discussion in the EIS.
120.13	Page 2-3, column 1, paragraph 4. Plans for reclamation, closure, and rehabilitation should be included in "Project Component Options Studied in Detail" in the EIS.
120.14	Page 2-5, column 1, paragraph 2. The locations of waste rock disposal sites should be described in this section and included in all alternatives in the EIS.
120.15	Page 2-6, column 2, last paragraph. Flotation agents proposed for use need to be listed and their toxicities and stabilities described in the EIS. All compounds resulting from the alkaline chlorination procedure and their toxicities and stabilities should also be included. Furthermore, each waste product's probable effects on marine organisms need to be discussed, as well as toxic effects resulting from possible chemical synergies.
120.16	Page 2-6, column 3, last paragraph. Four thousand tons of ore per day is 10 times the figure given for waste rock produced per day in column 3 of paragraph 4 on page 2-4. This contradiction needs to be corrected in the EIS.
120.17	Page 2-8, column 3, paragraph 2. "If necessary, secondary treatment process would be employed to meet discharge standards required by ADEC and EPA." This should be discussed further and considered as an alternative in the EIS.

120.9

A plan of operation can only be reasonably formulated by the project proponent after the Forest Service issues a Record of Decision. The EIS presents each alternative in sufficient detail to allow a reasoned discussion of the environmental effect of that alternative.

120.10

The projected impacts, in terms of acreage, importance values, and functions to wetlands are described in detail on DEIS pages 4-42 through 4-44. No floodplain vegetation types would be impacted by any of the alternatives being considered.

120.11

The USFWS administers many important acts not listed here; the Migratory Bird Treaty Act is only one of them. Since the project is not expected to have significant effects on migratory birds, listing that act would not enhance the FEIS.

120.12

Please see the FEIS for expanded discussions of these issues.

120.13

Such plans are included under management, mitigation and monitoring.

120.14

The locations of permanent waste rock disposal sites are shown on the plan views of each alternative presented on pages 2-33, 2-35, 2-37 and 2-39 of the DEIS.

120.15

All of the reagents proposed for the milling process are presented in Chapter 2 of the FEIS. Information on the toxicity of potassium xanthate at very low concentrations > 1 ug/l is not available. Effluent from the flotation process was evaluated in Lakefield (1990). The probable effects on marine organisms are described for those parameters which require a mixing zone to meet standards.

120.16

Waste rock production is expected to average 400 tons per day. Ore production is projected to average 4 000 tons per day.

120.17

Please see response no. 4 5.

DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT.

2

Page 2-9, column 2. Operation of the Sherman Creek tailings disposal site and its use as a borrow site should be discussed in further detail in the EIS. The effect of the size of the water body in the impoundment area needs to be described and the habitat area lost needs to be quantified in the EIS.

120.18

Page 2-10, column 2, paragraph 1. "Surface flows across the tailings would be contained in a lined and riprapped channel with overbank containment. All areas would be revegetated as required by the Forest Service." Possible long-term effects of leachates on water quality should be addressed in this section in the EIS. Monitoring to assure revegetation and the effectiveness of rehabilitation measures should be described as well. Moreover, possible remedial measures to be taken in the event of initial failure of rehabilitation efforts should also be identified and included.

120.19

Page 2-11, column 3, paragraph 2. Effective September, 1990, the Toxicity Characteristic Leaching Procedure replaced the EP toxicity test for hazardous waste characterization based on toxicity. Therefore, the text in the EIS should be revised accordingly.

120.20

Page 2-11, column 3, paragraph 3. This discussion needs additional information on the dewatered tailings option in the EIS. In addition, it should clarify why a 14 percent moisture content is described in the dry tailings alternative.

120.21

Page 2-12 and 2-40. It would be helpful if two illustrations were used to separate Option A and Option B of Alternative E in the EIS. The combination of the two is confusing.

120.22

Page 2-17, column 1, paragraph 2. The discussion in the text indicates sodium cyanide use is estimated to be up to 320 tons per year. This figure does not agree with Table 2-2, which indicates that cyanide use at the site could be up to 511 tons per year [1.4 tons per day X 365 days per year = 511 tons per year]. This discrepancy needs to be corrected in the EIS and the resulting information needs to be checked with page 4-34. The correct number should be used on p. 4-34 (where it states that approximately 320 tons of sodium cyanide would be shipped to the site each year).

120.23

Page 2-18, column 1, paragraph 2. The discussion on hazardous waste disposal should be expanded in the EIS. For example, the amount and type of hazardous waste, the time period of temporary storage, and the permitted hazardous waste treatment and disposal site(s) where the waste would be sent should be identified.

120.24

Page 2-21, column 1, paragraph 3. We believe the discussion of offsite processing of floatation concentrates is incorrect and should be corrected in the EIS. For example, Westmin Resources Ltd. operates an existing 2,500 short ton per day (std) carbon in leach (CIL) mill located approximately 11 miles north of Hyder,

120.25

120.18

Borrowing material from within the impoundment area is standard construction practice for embankments of all types and only serves to allow greater storage for a given embankment size. Habitat area losses are discussed several places in the DEIS.

120.19

Comment noted.

120.20

Toxicity Characteristic Leaching Procedures (TCLP) have been conducted by the Kensington Venture on waste rock and ore to provide information to supplement data from the EP toxicity testing and ASTM leachate method. Test results for both procedures are similar, which is consistent with the minor differences in extraction procedures used in the two methods.

120.21

A more detailed discussion of the dewatered tailings alternative can be found in the FEIS.

The 14 percent moisture content for the dewatered tailings material represents the maximum moisture content possible to attain compaction requirements. A greater percentage of moisture would reduce both the ability to place and compact the dewatered tailings and significantly reduce the dynamic stability of the embankment.

120.22

Comment noted.

120.23

The actual amount of cyanide that would be used annually at the project site is 297 tons (1630 lbs/day, 365 days/yr) based on information developed as part of the process design criteria evaluation. The 60 day storage requirement for on-site cyanide is estimated to be about 50 tons (Richins, 1991).

120.24

See Chapters 2 and 4 of the FEIS for additional discussion of hazardous substances used at the project.

120.25

The discussion in Chapter 2 has been revised.

DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT. 3

Alaska, and is actively seeking customers for custom milling. This mill is approximately 300 miles southeast of the Kensington Project and has adequate access via Hyder, Alaska and Stewart, British Columbia.

The mill could not handle ore directly due to undercapacity (2,500 stpd vs. Kensington's proposed 4,000 stpd rate) and because it does not have a flotation circuit. We believe the mill could handle the Kensington flotation concentrates (160 to 280 stpd) with some modification of its CIL circuit; namely, the Westmin's CIL tank agitator system would have to be modified to handle the higher density flotation concentrates.

Page 2-41, column 1, paragraph 3. "If environmental changes vary significantly from those predicted, additional remedial measures may be implemented to reduce or eliminate project related effects." If environmentally-detrimental changes occur, we believe remedial measures would need to be implemented and should be reflected in the EIS. Furthermore, conditions resulting in operation shut-down and possible rehabilitation measures need to be addressed in the EIS.

Page 2-41, column 2, paragraph 1. "If the No Action Alternative is selected, management, mitigation and monitoring would not be required." We believe that mitigation and reclamation for existing impacts from the exploration program currently in operation at the site need to be addressed under the No Action Alternative in the EIS.

Page 2-42, column 2, paragraph 2. "A detailed monitoring program would be developed based on the preceding objectives. This plan would be implemented as part of the Kensington Mine Plan of operations. Details of the monitoring plan would be determined after the Final EIS is approved." We believe an effective monitoring program cannot be developed without detailed, pre-project baseline studies that are conducted seasonally to determine varying seasonal conditions. The EIS should indicate which baseline studies would be conducted, what they would include, and when they would be completed.

Page 2-43. We believe the EIS should include--in the list of environmental measures common to all action alternatives--the use of sprays or enclosed conveyor belts to reduce airborne particulates.

Page 2-43 and 44 and Part C. The description of reclamation in the DEIS does not address the leachate potential from the tailings disposal area(s). We believe the types of leachates and what volumes expected under each alternative disposal technique should be described in the EIS as well as the expected remedial measures for potential problems. In addition, the measures to prevent erosion of the tailings disposal sites need to be described. Of

120.26

The discussion in Chapter 2 has been revised.

120.27

The Forest Service believes that it would be impossible to anticipate each and eventually not expected as a result of the project. The FEIS has anticipated the possibility that additional water treatment would be needed. We have taken this extraordinary step because of the level of public concern over this issue. We know of no other issue that merits this treatment and your comment does not identify any issues you want to see addressed.

120.28

Please see the revised discussion in the FEIS.

120.29

Chapter 2 of the FEIS contains additional information on monitoring objectives and monitoring plans.

120.30

Raw ore crushing and handling would be mostly located underground, except for alternatives with underground grinding where it would be wholly underground. Measures to protect workers from dust exposure would be taken.

120.31

Information on tailings, waste rock and old mine drainage (DEIS, Tables D2-7, D2-8, D4-5, and D4-6) indicates that there is little potential to generate leachate from tailings under any alternative.

120.26

120.27

120.28

120.29

120.30

120.31

DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT. 4

particular concern are alternatives that involve disposal sites in former stream channels (Alternatives B, C, and D). Runoff from tailings and leaching of chemicals into former stream channels would adversely affect subsurface water tables and could quickly percolate into downhill water bodies. Therefore, adverse impacts of disposed materials on groundwater resources and all downhill surface and subsurface flows also need to be addressed in the EIS.

Page 2-43. We believe reclamation plans should be included in the EIS for all alternatives and that included reclamation methods and measures should involve state-of-the-art techniques to replace or minimize lost terrestrial and aquatic habitats, not just to restore stream routes and riparian vegetation.

Page 2-44. How the project operators would prevent stream contamination from runoff across tailings both during and after construction should be specified in detail in the EIS, not just listed as a reclamation objective.

Page 2-49. Other alternative locations for the marine outfall pipeline that would have less impact on valuable marine organisms and habitats need to be identified and analyzed in the EIS.

Page 3-1, column 2, paragraph 2. We believe the assumption that "background concentrations of air pollutants characterize the airshed near the project" need to be validated with baseline studies of the air quality at the project site. In addition, those baseline studies need to be completed prior to designing and implementing a monitoring program. The EIS should specify how this would be accomplished.

Page 3-19, column 2, paragraph 4. We believe that before an adequate assessment can be made of the crustacean and/or other aquatic resources in Lynn Canal in the project area, a comprehensive, all-season biological resource investigation (baseline study) needs to be completed. The EIS should specify how this would be accomplished.

Page 3-20. We believe that the intertidal and subtidal surveys completed for habitat characteristics and dominant plant and animal groups is insufficient to draw the conclusions stated in the EIS. The need for comprehensive, multiseasonal baseline studies as indicated above, also applies in this case. The EIS should specify how this would be accomplished.

Page 3-22, column 2, paragraph 3. The survey conducted for marine species was restricted to a few days during April and December. Historic studies of the project area indicate extensive feeding and rearing use of aquatic communities and habitats. Therefore, current baseline studies need to be conducted as the basis for an accurate assessment of impacts of the project on demersal fish species. The EIS should specify how this would be accomplished.

120.32

Please see response no. 120.3

120.33

The Forest Service will require that the Kensington Venture employ the Best Available Technology for control of sediment. This may include the use of small sediment traps, hay bales, sediment fencing and other measures normally used in construction in or near stream channels. See also USDA Forest Service (1991).

120.34

Please see response no. 120.1.

120.35

Kensington Venture is not required to measure the background pollutants because it is not a major stationary source (18 AAC 50.300 (c)(1)). The assumption that the existing background concentrations of air pollutants characterize the airshed near the Kensington project is reasonable because of the lack of any nearby air pollution sources. Because there is no existing background data for the Kensington site, representative data was used from a nearby area in Alaska with characteristics similar to those at the Kensington site.

120.36

See responses no. 5.2 and 117.149. This comment, like others advocating further baseline studies, does not state how the information could be used to evaluate changes to populations due to deleterious effects.

120.37

See response no. 120.36. Some additional information is provided in Chapter 3 of the FEIS.

120.38

This comment refers to "historic studies of the project area" that "indicate extensive feeding and rearing use of aquatic communities and habitats." The statement is in error, however, because there is no evidence of "historic studies" of the area that indicate extensive use as stated. Upon checking with the original author of the comment to learn when and by whom these studies were conducted, it was learned that the statement had been edited by others without verifying the accuracy of the editing. The original author intended to make no such assertion and was aware that no such "historic studies" exist.

This comment is similar to others that suggest that evidence exists showing that the waters in and around the proposed outfall site are highly preferred areas for feeding and milling by immature fish. No documented evidence exists to show this.

This comment is addressed further in responses no 5.2, 117.149, and 117.200.

120.39

Studies were conducted in summer, 1991 to inventory habitat and fish populations within the areas to be inundated by the tailings impoundment and to be diverted. Those results are presented in Chapter 3 of the FEIS. The updated impact assessment in Chapter 4 of the FEIS incorporates results of those studies.

120.40

The text in the FEIS has been revised to indicate a total of 47 soils mapping units. It should be noted that Appendix Table D4-3 (DEIS page D4-9) contains a listing of 49 soils mapping units which occur in the Kensington study area. The reason for the apparent discrepancy arises from the treatment of two land forms types, Glaciers and Fresh Water, as mapping units by the Tongass soils mapping. By definition these units do not represent soils. The 49 soils mapping units minus Glaciers and Fresh Water equals 47 total soils mapping units for the study area.

120.41

The three references cited on DEIS pages 3-34 and 3-36 were inadvertently omitted from the References Section. They have been added to the FEIS.

Adamus Resource Assessment, Inc. (1987b) indicates that levels of certainty decrease from A to C. This source assigns no numerical values to the different levels of certainty. In the DEIS numerical values were assigned to these decreasing levels of certainty to calculate the "Wetland Importance Value" described on DEIS page 4-43 and previously in response no. 93.58.

120.42

The FEIS reflects your suggestion.

120.43

The discussion has been modified in the FEIS to clarify this information.

120.44

The Kensington Venture contracted Jim King (waterfowl biologist) to conduct winter and spring offshore waterbird surveys in the vicinity of the project site. Results of the 1990/1991 winter survey were summarized in the DEIS (see page 3-44, DEIS). Results of spring, 1991 surveys have been incorporated into the FEIS. These surveys have provided a characterization of waterbird use of marine waters near the project area.

DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT.

5

Page 1-27, column 3, paragraph 2 and page 3-30, last paragraph. The EIS should include more detailed data on freshwater fish species and habitat in the proposed project area and a more detailed impact assessment of the project's impacts on those resources.

120.39

Page 3-34, column 2, paragraph 2. Soil mapping units in the section entitled "Wetlands Mapping" do not add up to "48". One soil mapping unit has not been classified as wetlands, mixed wetlands, or upland soil type. This inconsistency should be rectified in the EIS.

120.40

Pages 34-36. The discussion under "Wetlands Function and Values" references Adamus Resource Assessment, Inc, 1987a, 1987b, and Adamus et al., 1987. The EIS needs to include these references in the "List of References". In addition, the EIS needs to clarify if the "A", "B", and "C" designations indicate levels of certainty increasing from "A" to "C" or if the levels of certainty decrease from "A" to "C". The text should also indicate if there is a numerical value associated with the levels of certainty.

120.41

Page 3-41, column 2, paragraph 1. We suggest that the term "Subunit" be referred to as "Game Management Subunit 1C" in the EIS.

120.42

Page 3-42, column 2, paragraph 2. This discussion should clarify in the EIS which "onsite field studies" are being referenced and which personnel conducted observations and documentation.

120.43

Page 3-43, Waterbirds. We believe the discussion of waterbirds need to be revised in the EIS to include site-specific information. FWS can provide additional waterfowl survey information from surveys conducted in 1991 (King, 1991). In addition, we believe additional waterbird studies should be conducted to produce a realistic record of the annual waterbird cycle in the project area. The EIS should specify how this would be accomplished.

120.44

Page 3-43, column 3, paragraph 2. The DEIS states that "A variety of waterfowl, seabirds, and wading birds could occur near the project area, depending on the season." We believe studies of migratory birds should be conducted throughout the year for valid population and seasonal use information. The EIS should specify how this would be accomplished.

120.45

Page 3-44, column 1, paragraph 3. We believe the EIS should include the latest surveys, conducted in 1991, on the use of the project area by migratory birds. In addition, as stated above, the EIS should identify studies to determine the use of the area by nesting migratory birds. The EIS should also provide information on how disturbance or destruction of migratory birds and/or their nests would be avoided.

120.46

DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT.

6

Page 3-44, column 3, paragraph 1. The study completed on Vancouver geese by Dames and Moore (1989) was only conducted along shorelines. We believe that additional studies are needed to adequately document Vancouver Canada goose use of the project area. The EIS should specify how this would be accomplished.

Page 3-45, column 1, Figure 3-26 should be updated in the EIS to include three additional bald eagle nests as shown on the attached Figure 1.

Page 3-45, column 1, paragraph 1. We believe that surveys, which were performed for songbirds to "provide a general characterization of wildlife populations present within the project area" need augmentation during project planning. We further believe that a combination of the transect method with the point-count method at least three times for each season, conducted several weeks apart, should be used to give a more valuable record of passerine populations present and their relative abundance in the proposed project area. The EIS should specify how this would be accomplished.

The EIS should ensure that this discussion identifies some of the factors that influence counts, including time of day, weather, and the observer in addition to the period of time spent on each transect and transect methodology.

Pages 3-60 through 3-83, Figure 3-32, Table 3-16 (p. 3-64), Table 3-18 (p. 3-67), Table 3-19 (p. 3-67), Table 3-20 (p. 3-69), and Table 3-21 (p. 3-70) reference The McDowell Group (1990e); Table 3-15 (p. 3-63) references The McDowell Group (1990a); and Table 3-23 (p. 3-73), Table 3-26 (p. 3-78), and Table 3-32 (p. 3-83) reference The McDowell Group (1990d). These references need to be included in the "List of References" in the EIS.

Page 3-67, column 3, paragraph 1. The discussion under "Housing" needs clarification in the EIS. The type of dwelling units for the remaining 7 percent needs to be specified.

Page 3-79, column 1, paragraph 2. The discussion under "city of Skagway" notes that Curragh Resources has taken over the Faro mine, and lead/zinc ore (an estimated 500,000 tons in 1987) is trucked to an ore terminal facility in Skagway. The word "ore" should be replaced by the word "concentrate" in the EIS. In addition, this section should be revised to indicate that Curragh's Faro Division produced 604,000 tons of concentrate in 1990.

Page 3-82, column 3, paragraph 5. The discussion under "Transportation" notes that trucks carry approximately 500,000 tons of lead/zinc ore annually from Faro, Yukon Territory and lead/zinc ore, which is brought in from the Yukon Territory, is shipped out of Skagway on ore ships that arrive every other week. The word "ore" should be replaced by the word "concentrate" in the EIS.

The Forest Service questions the necessity for additional waterbird data for the EIS analysis since the only potential for significant impacts to waterbirds would be caused by an operational upset resulting in elevated levels of toxic constituents in the tailings pond waters or spills of potentially toxic substances into Lynn Canal. Additional waterbird surveys would not provide any additional refinement for projections of waterbird use of the tailings during such an upset period or permit an accurate assessment of waterbird losses resulting from a spill episode into Lynn Canal. Waterbird surveys conducted to date indicate waterbird use of marine waters near the project area is very dynamic and that the magnitude of potential bird losses associated with an accidental spill at any given time in the future would be impossible to predict.

120.45

Please see the second part of response no. 120.44.

120.46

Please see the first part of response no. 120.44.

Initial studies and evaluations of existing habitats indicate that the potential for migratory waterbird nesting activity is low in most areas proposed for disturbance. Following completion of winter, 1990/1991 and spring, 1990 waterbird surveys, Jim King indicated that he saw "no obvious mine conflicts with the bird resource as long as reasonable care is taken with water quality and with powerline construction" (King, pers. comm. 1991).

Once a Record of Decision is issued, but prior to Forest Service approval of the Plan of Operations, the Forest Service will consult with the U.S. Fish and Wildlife Service to develop appropriate, specific measures to avoid or mitigate disturbance to waterbird nesting habitats if necessary.

120.47

According to Isleib (1990, as cited in DEIS) Vancouver Canada geese in this region typically nest in the beach fringe within 100 yards of the marine shoreline. Nesting at more upland sites is restricted by snow cover that persists through the early portion of the nesting season. Further, spring waterbird surveys conducted through early June 1991 indicated only minor use of the project area by Vancouver Canada geese. Three surveys conducted in the period from May 5 through June 3, 1991 recorded only six to 12 Vancouver Canada geese in Berners Bay and none in Lynn Canal near the project area.

As a result, there is no evidence to indicate that Vancouver Canada goose populations would be significantly impacted by the proposed action and that there is no justification for conducting more detailed studies of Canada goose nesting use of the project area.

120.48

The FEIS reflects your suggestion.

120.49

Throughout the scoping process for the Kensington EIS and related agency meetings, the Forest Service and its contractors have met on numerous occasions to identify and discuss important wildlife issues. Additional marine waterbird surveys and planned toxicology sampling of furbearer tissues by the ADF&G to determine background levels of heavy metals were the direct result of some of these discussions. The U.S. Fish and Wildlife Service had not indicated, during any of these meetings, that songbird populations were an issue of concern except with respect to potential bird losses in the tailings pond if toxic levels of contaminants are exceeded. Additional songbird surveys would not improve impact analyses in the EIS since potential songbird use of the tailings pond cannot be predicted from additional information on relative abundance. The CEQ guidelines clearly direct agencies to "avoid useless bulk in statements" and to "concentrate effort and attention on important issues" (40 CFR 1502.15).

120.50

Please see the list of references in the DEIS.

120.51

Thank you for your comment. The statement has been revised to read "Single family dwelling units comprised 70 percent of the units, 21 percent were multi-family units, and 9 percent were mobile homes."

120.52

Thank you for the clarification.

120.53

Thank you for the clarification.

DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT. 7

Page 3-84, column 1, paragraph 1. The word "Bureau" should be replaced by the word "Borough" in the EIS.

Page 4-13. The percentage of process water obtainable from the tailings pond, i.e., the amount of recycling that can and would be done, should be described in the EIS.

A water budget for the project and project area should be developed for the EIS. All inputs, outputs, and needs for each affected waterbody should be delineated in addition to a description of the following: how much water would be discharged under various use and precipitation scenarios; how much would be taken and how much would remain in Sherman Creek; and how much would be recycled from the tailings pond.

The EIS should address how adequate minimum flows would be maintained to protect fish habitat values in Sherman Creek. The potential for using water from the underground mine as makeup water should also be addressed.

Page 4-14, column 2, paragraph 1. The EIS needs to include information on the chemical profile and quantity of effluent, including estimates of monthly tailings pond discharges. In addition, the EIS needs to provide adequate documentation on how the estimated water quality for the mill and tailings impoundment (Table 4-9) were made.

Page 4-14, column 2, paragraph 3. This section states that "Metals from the processing are not anticipated to be present in soluble form at significant levels in wastewater . . .", yet page 4-15 states that dilutions of the tailings pond effluent (assuming that the mill effluent has been diluted by at least two less concentrated sources to form the tailings pond effluent) would be required to meet the acute freshwater standards. These differences need to be rectified in the EIS.

Page 4-14 to 4-17. The discussion of mill and tailings pond effluent characteristics in the EIS should include a discussion of residual chlorine compounds that may be present after cyanide destruction since residual chlorine compounds can be toxic to aquatic life. The EIS should also discuss whether effluent dechlorination is necessary to offset this potential impact. This also needs to be addressed in relation to the discussion on the impacts of cyanides on page 4-32, which states that elimination of all free cyanide can be assured by increasing chlorine in the destruction process to the point of measuring detectable levels of residual chlorine in the mill process effluent. Although it is probable that this would not be a problem and dechlorination may not be necessary, the EIS should address this issue.

Page 4-15, column 1, paragraph 1. The EIS should discuss the use of the tailings pond as a process water treatment facility. We

120.54

Thank you for the clarification.

120.55

Please see Figure 4-6, Water Budget Schematic, in the FEIS.

120.56

Minimum flows in lower Sherman Creek would be maintained by providing complete diversion of the Ophir Creek tributary and diversion of up to the 25-year, 24-hour storm event for upper Sherman Creek. During low flow periods, when minimum instream flow conditions exist, underground mine drainage would be used to provide process makeup water needs. This would be accomplished by conveying underground mine drainage via a pipeline network to the mill for use. Please see responses no. 117.25, 117.88, 117.180 and 118.11.

120.57

Sources of chemical properties and quantities of effluent streams are specifically described in the footnotes to Table 4-9 (DEIS). The text accompanying Table 4-9 (DEIS) also describes the sources of data used in the Mass Balance Analysis. Please note that the FEIS discussion of water quality impacts has been revised. Review FEIS Chapter 4 and JMM (1992) for detailed understanding.

120.58

As stated in the FEIS the effects of any chemical or physical processes were included in the analyses. Please see Chapter 4, Surface Water Hydrology, Mill and Tailings Pond Effluent Characteristics.

120.59

Please see response no. 93.52.

120.60

Discussion of pond treatment process (passive treatment) have been described in FEIS Chapter 4. These are further discussed in JMM (1992).

120.54

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120.59

120.60

believe that while a settling pond may be an appropriate way to "treat" turbidity, it is inadequate when heavy metals and other contaminants are adhered to such particulates. In addition, the EIS needs to include tailings pond discharges estimates on a monthly basis.

Page 4-15, column 2, paragraph 2. "Metal ions in the tailings pond effluent that are projected to reach concentrations above acute or chronic toxicity criteria for fresh water organisms include copper, silver, lead, and zinc." The measures to be taken to assure that waterfowl would not use this pond should be described in the EIS.

Page 4-16, Table 4-9. Table 4-9 should be revised in the EIS to indicate how the tailing decant water samples relate to the expected mill effluent. How the existing settling pond data relates to expected mine drainage should be clarified also. In addition, the sources of the information presented should be explained in more detail.

It appears that the "Upper Limit" on Table 4-9 was calculated using the mean, plus 2 standard deviations. We believe that this method may or may not produce valid estimates, depending on the characteristics of the data sets from which they were calculated. In addition, the average pond effluent assumed dilution by mingling the mill effluent, mine drainage, and undiverted surface runoff. The amounts and concentrations of these sources should be addressed in the EIS. The monthly precipitation in this area varies considerably, and, as a result, the undiverted runoff may make a considerable contribution to both the dilution of the contaminants and the volume discharged. The amount of time assumed for each of the two scenarios--"Mean and Upper Limit"--should be stated. Furthermore, the range of parameter values, and the amount of time each is expected should be added to the EIS.

Page 4-18, column 2, paragraph 1. This section states that the upper culvert would be sized to withstand a 25-year flood. We believe that the chances of exceeding a 25-year event in a 14-year project are very high. Loss of this structure during a flood event may cause high sediment loads to enter Sherman Creek, which in turn, could have major adverse effects on the aquatic resources of Sherman Creek. The EIS should specify measures that would be taken to ensure that the Sherman Creek diversion remains intact and sediment control structure function throughout the life of the project.

The EIS also should address potential alterations of the temperature regime of Sherman Creek--which could negatively affect developing salmon eggs and fry in the downstream reaches of the creek--as well as potential sediment loading during a flood event.

Page 4-18, column 2, paragraph 4. The DEIS states that, "Temperature alteration in lower Sherman Creek due to the removal

120.61

The section on the potential toxicity of tailings pond waters to waterbirds and other wildlife has been revised and expanded in the FEIS.

120.62

Tailings decant water samples were taken from process water that will be expected to make up the mill effluent. Station 101 contains drainage from the 800 level mine adit.

120.63

Amounts and concentrations of the various waste streams are specified in Table 4-9 and accompanying footnotes. The predicted effluent values were considered conservative because direct precipitation was not included. Flows considered were mean annual. Upper limit refers to low flow period, January-March.

120.64

The upper Sherman Creek diversion is sized to convey the 25-year, 24-hour storm event. Excess stormwater would be routed from the diversion to the tailings pond in an engineered channel. The stormwater would then be routed through the tailings pond and discharged to Lynn Canal through the tailings pond decant system. This method of water management control will reduce sedimentation impacts in lower Sherman Creek by using the Sherman Creek diversion and water supply structure as a sediment trap.

120.65

Please see response no. 86.6.

120.61

120.62

120.63

120.64

120.65

DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT. 9

of vegetation canopy and alternation of flow of the diverted flow from Ophir Creek is not expected to be significant." The EIS should include the basis for this conclusion since it is counter to documented impacts associated with these activities on other projects.

The statement "Continuous measurement of temperature in the lower Sherman Creek could be monitored, if deemed necessary" should be changed in the EIS to "Continuous measurement of temperature in lower Sherman Creek will be necessary to document impacts of canopy removal and diversion of Ophir Creek waters on fish and other aquatic life in lower stream reaches."

Page 4-18, column 3, paragraph 2. The EIS should specify measures to ensure that the emergency spillway of the tailings impoundment would be used only as a measure of last resort, since its use is likely to introduce metals, chlorine, other waste products and large quantities of suspended sediment into the remaining reaches of Sherman Creek, and ultimately, the waters of Lynn Canal. We believe that the release of such untreated wastes could cause harm to the existing biological communities and a commercial fishery.

Page 4-19, column 1, paragraph 2. We believe the proposed post-production reconstruction of Sherman and Ophir creeks is unacceptable, since the loss of resident and anadromous fisheries would occur from the time of initial diversion until production ends. If Alternative B is selected, the minimum flows within the diverted creeks would need to be maintained for usable fish and wildlife habitat, a subject that should be addressed in the EIS. Erosion of waste materials by Sherman Creek would result in disposed contaminants being carried into both Sherman Creek and Lynn Canal. The EIS should document how erosion of tailings and subsequent damage to Sherman Creek would be prevented. In addition, the EIS should specify how the tailings disposal areas would be stabilized for the life of the project.

Page 4-19, column 3, paragraph 1. We believe Alternative C would result in a variety of adverse impacts on fish and wildlife resources. For example, the cargo transfer point at Berners Bay would expose an entire additional, semi-enclosed waterbody to contamination through spills and operational pollution. The additional road and Liquified Petroleum Gas pipeline would similarly increase both the area at risk and the area impacted by operational activities. Therefore, we believe that the full-range of potential biological impacts need to be assessed in the EIS.

Page 4-20, column 3, paragraph 3. We believe the statement that a rupture of the tailings pipeline would have minimal effects on surface streams is incorrect and should be modified in the EIS, since the project area's steep terrain causes surface streams to be susceptible to rapid effects from activities in the watershed. We believe this conclusion is confirmed by the August 1990 oil spill

120.66

Please see response no. 86.6.

120.67

Please see response no. 86.6

120.68

The design of the tailings impoundment facility provides for diversion of the probable maximum precipitation event from Ophir Creek and the 25-year return period event from upper Sherman Creek. Stormwater from the undiverted watershed will be detained in the tailings pond impoundment area. The tailings embankment is designed to contain runoff generated from the PMP event within the minimum freeboard of 12 feet. The spillway is not designed to be used for long-term tailings pond water discharge until the end of the project life when the tailings surface is reclaimed and a low velocity channel is constructed across the tailings surface. During the operating life of the mine the spillway would only be used for conveying flows from the Ophir Creek diversion.

120.69

Please see the discussion of Management, Mitigation and Monitoring in Chapter 2. ADF&G will establish low flow restrictions by the authority of AS 16.05.870 Protection of Fish and Game. See also response no. 93.3.

120.70 The DEIS discloses the effects of this alternative.

120.71

Comment noted. Please see Chapter 4, Surface Water Hydrology. Effects Alternative D, Site Development.

DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT.

10

in the project area.

Pages 4-22 through 4-23. The discussion of mine water should be expanded in the EIS to include the name of the laboratory that ran the tests, the methods they used, and if those methods were approved by the Environmental Protection Agency.

120.72

Page 4-23, column 1, paragraph 1. The section entitled "Mine Water" references Table D4-8, "Selected Ground Water Quality Data, Underground Mine, 850 Level", and Table D4-7, "Selected Ground Water Quality Data, Underground Mine, 2,000 Foot Level" (p. 4-23). This is incorrect and should be rectified in the EIS. The reader should be referred to Table D2-7 and Table D2-8 for the Water Quality Data.

120.73

Page 4-23, column 1, paragraph 2. The DEIS states that five ore and waste rock samples were analyzed for acid producing potential and were found to have a "relatively low" potential. The term "relatively low" needs clarification in the EIS. In addition, because acid mine drainage is a major problem, the EIS needs to address what would be done to alleviate it, if it occurs.

120.74

This section states that the water quality of the seepage would be monitored during the mine operation. The parameters to be monitored and the frequency of testing should be described in the EIS.

120.75

"Five examples of ore and waste rock were analyzed . . . The analyses indicated that the acid generation potential of ore and waste rock is relatively low." While this statement is based on results presented in Table D4-5 on page D4-11, the acid buffering potential value listed for both "Fresh Ore" and "Surface Ore Exposure" samples show the ore to have acid-generating potential (negative buffering potential). This apparent contradiction should be rectified in the EIS.

120.76

Page 4-23, column 1, paragraph 3. "If oxidation were occurring, the sulfur would yield sulfate ions and hydrogen ions which would lead to decreasing pH on the lower level". We do not believe this statement is true if the buffering capacity of the water is sufficient to neutralize the amount of acid generated. The sulfate ions could be coming from either soluble sulfate minerals or sulfide oxidation. This statement should be reexamined and clarified in the EIS.

120.77

Page 4-23, column 1, paragraph 4. "The ore and waste rock testing program . . . indicates a low potential for acid generation". We do not believe this conclusion follows from the data presented. As discussed above, the increasing sulfate concentration indicated that acid may be generated, while the acid buffering potential indicates the potential for acid generation to exceed the buffering capacity of the ore. This statement should be clarified in the

120.78

120.72

The EPA does not approve laboratories. Names of all laboratories performing analyses for the project can be found in the Forest Service planning record files.

120.73

The FEIS has been corrected per your observation.

120.74

A complete interpretation of the various analyses associated with the five ore and waste rock samples contained in the *Soils Technical Report for the Kensington Venture Gold Mine Project* (IME, 1991a, as cited in the FEIS). This report is contained within the Forest Service planning record for the Kensington EIS and is available for public review. The term "relatively low" acid producing potential refers to the commonly accepted standard of materials having Acid Base Potential values of less than -5 tons/1,000 tons.

120.75

FEIS Chapter 2 contains additional information on monitoring objectives and expected monitoring plan.

120.76

A complete discussion of the apparent "contradiction" of the referenced text and table values cited can be found in the *Soils Technical Report for the Kensington Venture Gold Mine Project* (IME, 1991a, as cited in the FEIS). In summary, the explanation for the "contradiction" is that the ABP test is based upon the assumption that all of the total sulfur in the samples will be reactive and result in the generation of acid. This assumption is not correct because sulfate sulfur is the by-product of previous oxidation and cannot be reactive. The sulfate sulfur content of the fresh ore is negligible and would not affect the conclusions. However, sulfate sulfur for the "surface ore exposure" sample amounts to 0.68 percent or 19.4 percent of the total sulfur found in this sample. This means that the potential acidity value of the -105 tons/1000 tons is exaggerated by a factor of at least 19.4 percent by assuming that the sulfate sulfur will be oxidized.

The organic sulfur (2.07 percent) representing 87.7 percent of the total sulfur in the "fresh ore" sample also is assumed to be reactive by the ABP test. However, since the "weathered ore," which has been exposed to the atmosphere for approximately 9 to 10 months, still contained 0.67 percent organic sulfur or 71.3 percent of the total sulfur. These values can be compared with the "surface ore exposure" with 2.37 percent organic sulfur which represents 67.7 percent of the total sulfur. What these data show is that organic sulfur does contribute to the potential acidity of these materials, as evidenced by the reduction in its overall percent composition as compared to the total sulfur value. However, over geologic time, 67.7 percent of the organic sulfur is still unoxidized. This means that the assumption of the ABP test that all of the organic sulfur will oxidize over time is incorrect. The analysis clearly indicates that at least 67.7 percent of these materials are nonreactive and do not contribute to the potential acidity of these materials.

The assumption for the ABP test would also mean that all of the pyritic sulfur is reactive and will oxidize over time. Comparing the three samples referred to above, the relative percent pyritic sulfur of these samples is 8.1 for fresh ore, 23.4 for weathered ore, and 12.9 for surface ore exposure. The presence of pyritic sulfur in the "surface ore exposure" sample, which has been oxidized over geologic time again refutes the assumption used in the ABP test.

What the sulfate, organic, and pyritic sulfur comparisons show is that the ABP test assumption results in an overestimation of the potential acidity of the "surface ore exposure" sample by a factor of 19.4 percent for sulfate sulfur, 67.7 percent for organic sulfur, and 12.9 percent for pyritic sulfur. This means that the -105 tons/1,000 tons potential acidity value is exaggerated by a factor of at least 99.1 percent. Therefore, when nonreactive sulfur is deleted for the ABP comparison, the resulting value would be approximately -1 ton/1,000 tons, which is a value of little environmental concern. It is for these reasons that the conclusions on DEIS page 4-23 were made.

120.77

The three by-products of sulfur oxidation are iron, sulfate, and hydrogen. Acid mine drainage waters typically result from a surplus of hydrogen ions which are associated with a low pH value and elevated levels of sulfate and iron. Some of the by-products of oxidation would be present regardless of the buffering capacity of the water. Waters having a high buffering capacity may not be acidic but will still have the by-products of oxidation (sulfate and iron). The absence of elevated sulfate and iron levels in existing mine drainage waters clearly suggests that oxidation of sulfur is occurring in minor amounts. Whether or not the increase in sulfate in mine waters from the upper to lower adit is the by product of oxidation of sulfur or soluble sulfates is irrelevant since the other by-products from oxidation of sulfur are absent from the mine discharge waters.

EIS. This point is raised again in the discussion of soils on page 4-41, which states that the pyritic sulfur contents in both the surface exposed ore and waste rock materials have not oxidized, and thus, there is no evidence to suggest that the mine ore or waste rock materials would do so.

We believe that the much lower sulfate levels in the 2,000-foot level are more likely due to the fact that this adit was driven between 1887-1915, whereas the lower adit (850 ft level) was driven in 1988 by the Kensington Venture. Consequently, oxidation has proceeded on the higher level for 76 years, but has only been at work on the lower level for 3 years. This also suggests that over the long term, oxidation of the sulfides would not be a problem because neutralization is more than sufficient to offset acid formation.

Page 4-26, column 2, paragraph 1. The applicant proposes application of a mixing zone to effluent standards for this project. We believe that while this approach may be appropriate for a small or short-term discharge, it is inappropriate for a project of this duration, with a discharge of this magnitude into a sensitive, biologically-productive environment. We further believe that the potential accumulation of metals in sediments adjacent to the discharge area would be significant. Based on a discharge of 2,500 gallons per minute and the Average Pond Effluent Mean (table 4-9), the discharge would result in the deposition of 146 kg/copper, 252 kg/lead, 10.1 kg/silver, and 90.1 kg/cyanide throughout the life of the project. This should be clarified or changed in the EIS.

Page 4-27, column 1, paragraph 2. The EIS discussion of marine discharges should indicate why only three months (April, June, September) were modeled.

Page 4-30, column 3, paragraph 2. This section indicates that a primary factor in avoiding impacts to marine organisms is their mobility, i.e., their ability to avoid and/or move out of a contaminated area. Although this may be true of many species, we do not agree that it is true of all planktonic species as stated in the EIS, and it is not true of many benthic species. This discussion should be revised in the EIS, particularly given the importance of the area to commercial and sport fishing.

We believe that given the amount of contaminants that would be discharged, as noted above, the potential for harm to organisms in the discharge area is very high. In addition, we do not believe that avoidance should be the basis for an assumption that biological resources would not be exposed over a long time period to large quantities of toxic materials from the discharge of contaminated material. Furthermore, the large amounts of ammonia and nitrate discharged through the marine outfall line could cause a localized area of high biological production, thus attracting

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No evidence of oxidation of the ore and waste rock samples weathered over varying periods has been documented. Based on the failure of the samples to conform to the ABP test assumptions and the absence of the by-products of oxidation in any of the samples, the conclusion of "low potential for acid generation" is well founded.

The presence of high levels of pyritic sulfur in the "exposed ore" and "waste rock" materials does not necessarily mean that future oxidation is possible. Numerous scientific studies on the processes of acidification have documented that many different forms of pyritic sulfur exist, and these forms respond very differently to the processes of oxidation. For example, massive pyrite, having a small surface area, is relatively resistant to weathering, while framboidal pyrite, having a large surface area, is very reactive to the processes of oxidation. The conclusion of low acidification potential is supported, both by the absence of any evidence of acidification of these material and the fact that not all materials high in pyritic sulfur will become acidic.

We agree with the final conclusion that the sulfate data from the lower and upper adits can be used to conclude "that over the long term, oxidation of the sulfides would not be a problem because neutralization is more than sufficient to offset acid formation."

120.79

See response no. 120.2. The comment suggests that the discharge standards should be total weight of the effluent constituents over some period of time.

The water quality standards applied by the EPA and DEC are based on concentrations of those constituents. If overall weight of metals was the critical determinant of impact, then virtually all of the rivers in southeast Alaska could be viewed as highly detrimental to aquatic resources.

The comment suggests that cyanide will be deposited at a certain rate, which is not the case. Cyanide as such will essentially not exist after a relatively short period of time; it will undergo various chemical changes in the environment and not be present as cyanide.

Refer to the expanded wastewater submarine discharge impact assessment in Chapter 4 of the FEIS which includes an evaluation of total suspended solids distribution in the water column and deposition on the sea bed. See also Kessler and Vigers (1992). Sediment accumulations of wastewater constituents over the life of the project will not be measurable anywhere in Lynn Canal. It is not the duration of a wastewater discharge that is important but rather the rate of wastewater constituent loading of the receiving waters compared to the receiving water renewal rate (i.e., Lynn Canal flushing rate). Also see response no. 87.1.

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DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT.

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some organisms to the contaminated area.

We believe that upland treatment of effluent should be evaluated as an alternative in the EIS. In addition, we believe that alternatives to use of a mixing zone and alternative discharge locations should also be evaluated.

We believe that routine effluent bioassays should be included in the EIS as a monitoring tool. These should be conducted using both water column and benthic organisms to address the effects of the effluent on both areas of potential impact, since short-term bioassays would not address the issues of bioaccumulation and biomagnification; rather they would only indicate if the effluent is acutely toxic. In addition, since synergistic effects have been noted for various combinations of copper/cadmium/zinc/nickel, bioassays would address this concern (Moore and Ramamoorthy 1984).

We believe the EIS should identify studies to be conducted to determine the effects of the effluent on migratory fish and whether the fish would avoid toxic zones, since this could have major adverse impacts on the Lynn Canal commercial fishery. It should also be noted that Sherman Point, which is located near the proposed discharge point, is the single most popular fishing spot in the Lynn Canal fishery during the sockeye salmon (*Oncorhynchus nerka*) run and would be exposed to the effluent on a regular basis.

Page 4-32, column 1, paragraph 2. "The only metal listed by the EPA (1986) as a carcinogen is arsenic." The National Institute of Occupational Safety and Health Pocket Guide to Chemical Hazards (1987) recommends that several other metals listed in the draft National Pollutant Discharge Elimination System permit be treated as potential human carcinogens, including cadmium, chromium, and nickel. These metals should be included in the discussion in the EIS and on Figure 4-9 and on page 4-30.

Page 4-36, column 2, paragraph 5. This section states that a year-round streamwater withdrawal of the full amount proposed would likely have an adverse effect on downstream fish life. Other water sources that could provide instream flows should be identified in EIS.

Page 4-37, column 1, paragraph 1. The DEIS states that unreasonable rainfall patterns could overwhelm siltation control systems and cause higher levels of impacts than expected. The EIS should address how such a situation would be avoided. In addition, the statement that impacts due to sedimentation occurring during the construction phase could be of relatively short duration (1 to 2 years) needs correction. We believe that the loss of one or two cycles of reproducing pink salmon could have repercussions on the food chain for many years. If high sedimentation rates result in fines impaction in spawning gravels, a potential exists for the loss of many years of pink salmon recruitment, as well as loss of

120.80

Of the three months, September and April in large measure span the seasonal range in water column mixing conditions that are important in determining the impact of wastewater discharge on the Lynn Canal environment. Refer to Chapter 4 of the FEIS for a pertinent discussion and to Kessler and Vigers (1992).

120.81

All planktonic species, by their very definition, would move through the area of elevated concentrations of various effluent constituents quite quickly. Non-mobile benthic organisms in the vicinity of the outfall would be at the highest risk of bioaccumulating; this was stated in the DEIS and is affirmed in the FEIS.

The comment suggests that mobility should not be the determinant as to whether there is biological impact or not. It is one of the many factors that were considered. This matter is discussed further in Chapter 4 of the FEIS.

The assertion that the area could be enriched by nutrients is not realistic given the flushing action in the area.

120.82

Please see response no. 120.1.

120.83

The NPDES permit will require bioassays to monitor toxic effects of the discharge as well as bioaccumulation. Refer to the draft permit (DEIS Appendix D) for a description of the tests to be performed.

120.84

Each of these points were addressed in DEIS Chapter 3 and 4. The same points are included in the FEIS but are expanded upon.

120.85

These items are addressed in FEIS Chapter 4.

120.86

See responses no. 117.25, 117.88, 117.180, 118.11 and 120.56. Water withdrawal from Sherman Creek for process makeup needs and domestic use would be discontinued during extreme low flow conditions based on a minimum instream flow needs that will be prescribed by the Forest Service and ADF&G. When stream flow conditions preclude water withdrawal due to low flows, process makeup water would be obtained from underground mine drainage sources.

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The scenario described in this comment is not reasonable to expect. The worst case scenario due to increased sedimentation during construction would be a reduction in production, but not complete destruction

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the benthic invertebrate community on which resident fish depend.

Page 4-37, column 1, paragraph 3. The DEIS states that "Regardless of measures taken, periods of above ambient levels of suspended sediment would result from construction activities within the drainages, especially during periods of rainfall and snowmelt." The EIS should address how this impact could be avoided.

Page 4-38, column 1, paragraph 4. The Sherman Creek diversion would destroy 6,000 feet of stream habitat and all resident fish. We believe that this loss of fish habitat would necessitate measures to replace lost production. Therefore, actions to be taken to offset this loss should be added to the discussion in the EIS.

Page 4-38, column 2, paragraph 5. The EIS should describe the chances of impoundment overflow as the impoundment begins to fill with tailings. In addition, measures to be taken to avoid this possibility should be described. Moreover, the seepage collection facility and the method of pumping seepage water from the seepage collection facility into the impoundment should be described.

Page 4-38, column 3, paragraph 1. The DEIS states that "Should levels be increasing over time, additional measures would be required to prevent further contamination." The criteria to be used to determine when remedial action is necessary should be described in the EIS. Since contaminant levels can be expected to increase over time, the EIS should describe that eventuality, as well as the nature of the actions to be taken when this occurs.

Page 4-39, column 1, paragraph 2. Measures to restore populations of fish and aquatic invertebrates in Sherman Creek from diversion of waters and from a potential dam failure should be described in the EIS. We believe that the comparison to stream recovery after the eruption of Mt. St. Helens is irrelevant and should be deleted. We further believe that it is only speculation that aquatic organisms would recover within 10 years. How the stream would be rehabilitated and who would carry out those activities should be described in the EIS. Impact of silt sediments due to placer mining activities has been shown to reduce invertebrate abundance and diversity for many years. Therefore, permanent erosion prevention measures should also be described in the EIS.

Pages 4-42 to 4-43. We suggest that the discussion of wetlands be expanded in the EIS. Table 4-17, "Relative Importance of Wetlands Lost" cannot be produced according to the procedure outlined in the discussion that precedes it. It appears that some weighting factor was used for the wetland functions and values in Table D4-11 on page D4-19 or that the associated "A", "B", and "C" certainty level designations influenced the calculation of the wetlands importance value. This should be clarified in the EIS.

The comment suggests that this could lead further to the destruction of both brood lines for pink salmon, with compounding effects on the food chain in Lynn Canal. A loss of the benthic invertebrate population in the stream is suggested as well. Construction impacts are never this severe with today's regulations and compliance processes. To suggest otherwise ignores the existence of regulatory agencies and enforcement.

Impacts of construction activities are described in Chapter 4 of the FEIS.

120.88

Both EPA and the Forest Service will require the implementation of best management practices to control sediment production from the site (see Forest Service, 1991).

120.89

Comment noted.

120.90

The design of the tailings dam is based on providing sufficient storage for tailings generated annually behind the embankment plus providing excess storage capacity for runoff from a PMP event within the minimum freeboard of 12 feet over the operating life of the mine.

120.91

The available information shows very little probability that contaminant levels in Sherman Creek will increase with time.

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The reference to Mt. St. Helens was in regard to how rapidly the stream could recover following a worst case scenario for dam failure. The reference is highly relevant because it demonstrates how resilient salmonid and invertebrate populations are to extreme cases of habitat destruction.

Further consideration is given to restoration of the stream following project shutdown in the FEIS.

120.93

The acreage of disturbed wetland and upland communities were determined by first calculating the acreage of each soils mapping unit to be disturbed. The soils mapping units have been correlated by the Forest Service with forest plant associations and detailed descriptions of percent plant composition for each plant association. The plant composition information was compared to the Wetland Delineation Form found in the 1989 *Federal Manual for Identifying and Delineating Jurisdictional Wetlands*. Plant associations having a dominance of hydrophytic plant species were considered to be wetland communities. Plant associations which did not satisfy the vegetation criteria for wetlands were considered uplands.

Using the wetland importance calculation for all fifteen plant associations in Table D4-11, the lowest possible wetlands importance value would be 18 for the Western Hemlock, Blueberry, Skunk Cabbage Plant Association. This means when you divide the "Wetland Importance Value" in Table 4-17 on page 4-43 by the "Wetland Disturbance Acres" in Table 4-16 on page 4-43, the resulting number cannot be less than 18. Alternative D and E - Site A have values of 10.8 and 17.7 respectively. These calculations should be checked and rectified in the EIS since they are the basis for the conclusion that Alternative D would have the least impact on wetland functions and values, and Alternative C would have the greatest impact.

Page 4-43, column 3, last paragraph. It is stated that field investigations were made on previously disturbed wetland areas. Information on who did the studies, what areas were examined, when the studies occurred, and how the wetlands reestablished themselves should be included in the EIS.

Page 4-44, column 2, paragraph 2. We believe the EIS should provide an expanded discussion on the reasons why Alternative E would not result in wetlands reestablishment. In addition, other locations considered for dewatering structures should also be described.

Page 4-45, column 2, paragraph 1. We believe that monitoring revegetation efforts should be described in the EIS as well as who would ensure that rehabilitation of project impacts occurs.

"Less mobile species" should be fully identified and possible measures to prevent or lessen their loss should be addressed in the EIS.

Page 4-51, column 3, paragraph 1. In the discussion of contaminated surface water, we believe it would be more appropriate to cite cyanide toxicity data for wildlife that might land in the tailings pond rather than rainbow trout. We believe that conclusions about toxicity of iron cyanide on waterfowl from studies conducted on rainbow trout are incorrect. Studies relating to toxic effects on waterfowl and other migratory birds should be addressed in the EIS.

We believe that a waterfowl species, such as the Vancouver Canada goose, and a shorebird species should be added to the list of species monitored, although they are not listed as an indicator species on page 4-46.

Page 4-52, column 3, paragraph 3. Disturbance of bald eagles constitutes a potential violation of the Bald Eagle Protection Act. The timing of blasting activities to preclude this possibility should be identified and addressed in the EIS.

As indicated on DEIS page 4-43, column 1, paragraph 1, wetland rankings were totaled for each wetland plant association and were then multiplied by the total plant association acreage lost to each action alternative. These values were summed to obtain the Wetland Importance Values contained in Table 4-17 (DEIS page 4-43).

As a result of your comment, we have carefully reviewed the wetland disturbance values in the *Jurisdictional Wetland Determination for the Kensington Venture Gold Mine Project* (IME, 1991b, as cited in the FEIS) and have found that some errors were made in the acreage totals presented in the DEIS. Also it was determined that the Wetland Importance Values were calculated based on total disturbance which included both wetland and upland habitats, not solely wetland habitats. As a result, the Wetland Importance Values given in Table 4-17, DEIS page 4-43 do not appear to make sense based on your analysis. Wetland Importance Values are lower than expected, when divided by wetland acreages, because upland plant association acreages with rankings of zero affected the final values calculated. We understand the confusion created by this approach, as indicated by your comments, and have modified the calculation of Wetland Importance Values so that only wetland acreages lost are considered. The revised values also are based on the corrected acreage totals obtained from IME (1991b). The numbers and discussion of methodology have been revised in the FEIS to be consistent with the modified approach to computation of Wetland Importance Values.

The overall ranking of the action alternatives, in terms of their Wetland Importance Values, remains the same as that discussed in the DEIS.

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Please see response no. 120.93.

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The re-established wetland areas were evaluated during the 1990 vegetation and wetland field investigations. Wetland sampling was conducted on several of the previously disturbed sites. Details on methodology and results can be found in IME (1991b, as cited in the FEIS).

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The discussion of the potential of re-establishing wetlands on the various tailings disposal sites can be found on DEIS page 4-44. The third sentence of paragraph 2, column 3, has been replaced by the following. "Due to the existing steepness of the slopes in the vicinity of proposed dewatered tailings structures associated with Alternative E and restriction of natural wetlands on such steep slopes, it is anticipated that the re-establishment of existing wetlands on such sites would be very difficult, if not impossible."

A variety of sites were evaluated for the dewatered tailings. Two constraints, steep slopes and no placement in drainage bottoms, severely restricted the number of suitable sites. Sites A and B were selected as the most feasible based on engineering and stability considerations.

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Please see response no. 7.5.

120.98

Less mobile species expected to be lost due to direct habitat disturbance include small mammals species such as northern bog lemming, red-backed vole, and meadow vole and amphibians such as boreal toad and long-toed salamander. The only means of reducing losses of these species is to lessen the total amount of direct habitat disturbance. The extent of surface disturbance is shown in Chapter 4 of the DEIS.

The focus of mitigation for losses of less mobile species will be on reclamation of temporary disturbances as quickly as possible and for final reclamation to establish habitats that will be rapidly recolonized by small mammal and amphibian species.

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The section on contaminated surface water has been revised in the FEIS.

A wildlife mitigation and monitoring plan will be developed as a portion of the final Plan of Operations which the applicant must have approved by the Forest Service prior to project development. The Forest Service will discuss with the U.S. Fish and Wildlife Service any recommendations the agency might have regarding wildlife monitoring and mitigation. See also the revised discussion of mitigation in Chapter 2 of the FEIS.

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A discussion of the timing of blasting and other construction to mitigate potential disturbance to active bald eagle nests has been added to the FEIS. If a Record of Decision approving an action alternative is released, but prior to Forest Service approval of the Plan of Operations, the Forest Service will consult with the U.S. Fish and Wildlife Service to develop appropriate, specific mitigation measures to preclude disturbance of bald eagle nest sites.

DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT.

15

Page 4-53, column 1, first paragraph. The EIS should identify measures to be taken to ensure that migratory bird nests are not disturbed or destroyed.

Page A-5. The EIS should include a complete discussion of the proposed project's potential for an oil and/or hazardous substance spill and the resulting environmental impacts. Due to the steep terrain, rocky substrate, high precipitation rate, and sensitive biological communities, the entire project area is particularly susceptible to damage by oil and hazardous substance spills. In August 1990, a several-thousand-gallon diesel spill in the proposed project area demonstrated the mobility of spilled oil in this area. In this incident, the oil entered the rocky substrate, surfaced some distance below the spill site, entered Ophir Creek and consequently, Sherman Creek and Lynn Canal.

The DEIS indicates that large volumes of fuel and hazardous substances would be used at the project site, which necessitates frequent year-round fueling and offloading operations. We assume that a comprehensive, all-weather, spill-prevention and cleanup plan, including provisions for oil and hazardous substances expected to be on-site, and acquisition and maintenance of equipment and materials necessary for execution of the plan would be prepared and implemented prior to project development, assuming project approval.

Part B, page B5. This section states that "The Kensington Venture believes that pre-project environmental background data collected and used in final facilities siting is an appropriate form of mitigation, since emphasis was placed on avoiding impacts to important wildlife habitats, wherever practicable." However, we believe that fish and wildlife habitat loss and degradation would occur, and that collected data do not constitute measures to offset or decrease those impacts. This should be addressed in the EIS.

Pages C1 through C-8. We do not believe the DEIS adequately describes the post-mining configuration of the tailings disposal area (Alternative B). Therefore, the configuration of the tailings disposal area needs to be described in more detail in the EIS. In addition, provisions for the tailings to be completely covered, or methods to decrease exposure from erosion by Sherman or Ophir creeks, and leaching should be included. Furthermore, how runoff and leachates from the tailings pile would be handled after abandonment should also be identified and addressed.

This section in the EIS should describe how the dry tailings disposal areas would be stabilized to assure a permanent disposal (Alternative E). In addition, it should describe the content of the runoff and leachate water from tailings piles of either scenario.

Page C2, column 2, paragraph 1. The Reclamation Plan mentions the

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Please see the third part of response no. 120.46.

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Please see response no. 117.214.

DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT. 16

presence of power poles, yet their location, number, height, and guy-wire configurations are not described. The presence of such structures have resulted in documented causes of bird mortality, either through impact or electrocution. Therefore, their design, siting, and potential impacts to birds should be described in the EIS.

Page C3, column 3, paragraph 1. We suggest the addition of the stream diversion structure to the list of structures to be removed at the time of permanent operation closure in the EIS.

Page C6, column 3, last paragraph. This section in the EIS should describe what remedial actions would be taken if reestablishment of vegetation does not occur. In addition, the section should describe how maintenance would be conducted on the site as well as alternative reclamation plans.

Page D2, column 1, paragraph 2. The applicant states that monthly monitoring would continue through the first year after construction activities are completed. We believe the EIS should include monitoring through the first full year of ore processing so that a baseline during operation can be established. Continued monitoring can then be negotiated or stipulated in permits, as suggested in the DEIS. In addition, we believe that a minimum of weekly monitoring of a limited number of parameters during each start-up period should also be included in the EIS.

Page D4. Table D2 lists water monitoring parameters. Several parameters, such as metals, are listed to be analyzed as both dissolved and total recoverable forms. We assume that all of the metals analyzed using the AA Furnace, 304 method are to be analyzed for both dissolved and total recoverable forms. The table should be revised to clarify this information in the EIS.

Page D4-11, Table D4-5. The footnote to Table D4-5 indicates that a negative sign denotes "less than". A "less than" sign (i.e., "<") should be substituted for the negative sign in the EIS in cases where the tests indicated that the parameter quantity in question is below the detection limit of the test.

Negative signs in front of the numbers in the "Neut. Pot." (CaCO₃) and "ABP" (tons/1,000T) columns are actual negative values for these parameters; therefore, they do not conform to what the footnote indicates. These two parameters should be reported in the EIS in similar units, preferably in tons, CaCO₃ equivalent/1,000 tons. In addition, there should be numbers in the "ABP" column for "Tailings -2" and "Tailings -3" and not the "--" symbol. Moreover, the footnotes should note what the "--" symbol indicates.

We believe the organic sulfur content of both the fresh ore and the surface ore exposure (2.07% and 2.37%, respectively) seems very

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Both dissolved and total recoverable forms were measured.

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The comment regarding the need to change the "negative sign" to a "less than" sign has academic merit but is not reflective of the long established practice of analytical soils and water laboratories of using the negative sign to denote "less than" values. The values in this table are reported exactly as they were received from the soils testing laboratory. The interpretation of the "negative" sign for some of the CaCO₃ values is in error. The number conforms to the footnote as the symbol does denote a "less than" value. It is impossible to have a negative percent CaCO₃ value. The comment regarding ABP values is correct, however. The footnote should have indicated that it applied to all columns except ABP. Numbers with the "negative" sign in this column should be read as negative numbers.

Reporting Neutralization potential in CaCO₃ equivalent/1,000 tons is unnecessary since presentation as percent CaCO₃ is a convention which is just as acceptable.

At the time Table D4-5 was prepared for the DEIS, not all of the soils data had been received from the laboratory. The "--" symbol was used to denote samples for which data had not been received. These data are now available. The following data are new for this table. For Tailings 1: Exc. Ca = 24.0; Exc. Mg = 0.20; Exc. Na = 0.33; Ext. P = 1.4; and ABP = 92. For Tailings 2: Exc. Ca = 24.0; Exc. Mg = 0.40; Exc. Na = 0.33; Ext. P = 1.7; and ABP = 98.

Organic sulfur values from these samples are high. In fact the laboratory experienced difficulty in removing these materials with strong HCl acid. Such high organic sulfur values typically would suggest highly acidic conditions upon weathering. The very negative ABP values associated with the Fresh Ore, Old Mill Ore, and Surface Ore Exposure also suggest that acidification should be occurring. However, weathering of the surface exposed ore body has not produced acidic conditions over time. Ore samples which have weathered for over 60 years were no more acidic than ore sampled which had weathered only 10 months; and neither ore exhibited pH values (7.7 - 8.3) indicating acidic conditions. These data confirm numerous weathering studies conducted on various mine spoil materials which document that organic sulfur is largely impervious to weathering and does not contribute significantly to acidification. Failure of the samples to turn acidic over time refutes the assumption that all of the total sulfur is reactive which is the premise upon which the ABP test is based. The failure of these materials to oxidize when subjected to the atmosphere casts doubt on the ability of this test to identify potential acid forming materials.

DEPARTMENT OF THE INTERIOR, ATTACHMENT 1, CONT.

17

high for a hard-rock mineral deposit. The organic sulfur is contributing most of the acid generating potential of these samples, which is reflected in the low acid buffering potential (-24 and -105). This should be clarified in the EIS.

Page D8. This section mentions a tertiary treatment plant through which domestic wastewater would be treated. A secondary sewage treatment plant has been mentioned in the DEIS but not a tertiary plant. This inconsistency needs to be clarified in the EIS.

Part H, page H-1. Plant field studies were done between August and September of 1990. We believe the EIS should include additional surveys to be completed throughout the growing season to allow proper identification of the plant species in the project area.

120.105

Please see response no. 117.215.

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FIGURE 1

Kensington Gold Project

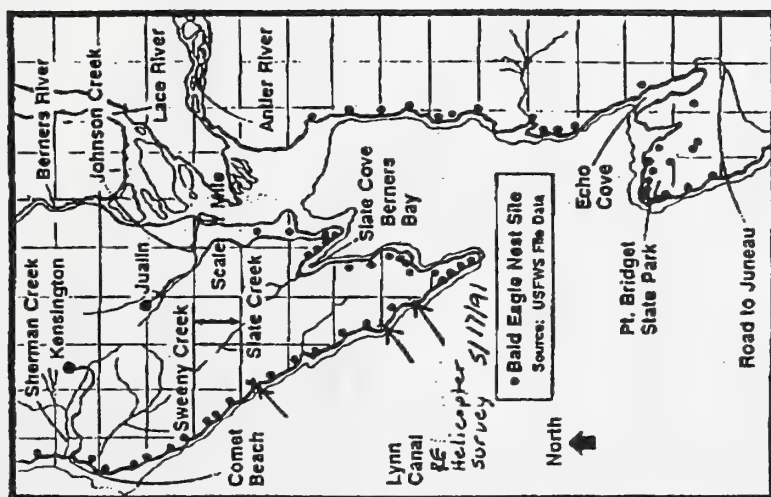


Figure 3-26. Bald Eagle Nest Sites

Three new bald eagle nests to be included on the Figure 3-26 on Page 3-45.

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September 3, 1991

Mr. Ken Mitchell, District Ranger
U.S. Forest Service
8465 Old Dairy Road
Juneau, Alaska 99801

RE: KENSINGTON VENTURE; JUNEAU, ALASKA

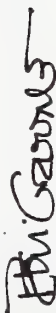
Dear Mr. Mitchell:

I am writing with regard to the Draft Environmental Impact Statement for the Kensington Venture as proposed by Coeur Alaska and Echo Bay.

While I do not oppose this project in principle, I do have serious concerns about the DEIS itself and certain aspects of this project. Specifically, I do not like the idea of a mixing zone, particularly when the option of backfilled tailings is technically feasible. Given the site's proximity to commercial fishing grounds, I believe the USFS should strive to protect existing resources at any cost.

I respectfully urge the USFS to follow NEPA guidelines which state that "information must be of high quality" and that decisions be made only after addressing all the issues in an in-depth fashion.

Sincerely,



Patti Greene
3301 Foster Avenue
Juneau, Alaska 99801

JUNEAU
RANGER DISTRICT

SEP - 4 '91

DISTRICT RANGER _____
DEPUTY RANGER _____
TLM _____
REC _____
F & W _____
EM _____
VIS _____

HAZARDOUS MATERIALS:

The DEIS provides no detailed information with regard to hazardous materials except to specify that the Kensington will comply with federal regulations regarding hazardous materials, disclosure, and spill contingency plans. Frankly, this is only stating the obvious: they are required by law to provide this information and would be in violation if they did not.

If this document were to be truly valuable, however, it would broaden its scope to fully describe all chemicals in the same manner and depth in which it discusses sodium cyanide; fully consider worst-case scenarios for all aspects of the operation; conduct an in-depth hazard analysis and a full assessment of cumulative impacts re: Kensington, AJ and Jualin marine shipment of hazmats throughout SE Alaska, Lynn Canal and Gastineau Channel.

Specifically, I find this document to contain inordinate discussion of cyanide while failing completely to address chlorine, an equally dangerous chemical, or other reagents. The probability of a chlorine incident is much higher, and historically more common, than cyanide incidents and therefore the shipping, containers, handling, storage, and ultimate use/location of this chemical should be addressed in far greater detail.

The DEIS only presents one option for a cyanide destruct process: alkaline chlorination. The USFS should consider all alternatives including another cyanide destruct process.

P. 2-20: The DEIS, in discounting underground flotation/leaching processes, explains, "Cramped working conditions make chemical reagent handling more prone to error." No discussion is made, however, of increased human error due to shift work, rotating shifts, etc., for which there is a direct correlation with industrial accidents. [As an aside, no mention is made of shift hours, numbers of shifts, whether they rotate, e.g., graveyard for a month, then switch to days for a month, etc.]

P. 2-20: DEIS admits to the possibility of HCN gas (hydrogen cyanide) formation due to incorrect monitoring of pH; no mention is made, however, about the probability of the formation of ammonia gas, nor is reference made to ammonia gas detectors, tests, etc. The discussion which centers on HCN is overly optimistic, fails to fully consider the probability of human error, and does not provide a realistic assessment of the likelihood of HCN formation.

P. 2-20: Explosive storage and LPG tank appear to be in relative proximity to each other; the USFS should consider whether each of these are in the other's blast zone under various scenarios, including worst-case. Further, a review of the site plan shows that the explosive storage appears to be directly under the helicopter flight path; a worst-case scenario, i.e., a helicopter crashing into the explosive storage, should be taken into consideration and properly mitigated.

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121.1

Sodium cyanide was chosen as a vehicle to describe a worst case accident because it is highly toxic and a subject of public concern. The effects of spilling large quantities of any hazardous materials into Lynn Canal would be locally devastating. This is well known, and no useful purpose would be served by merely reciting a litany of worst case scenarios. It is far more valuable to concentrate on efforts directed toward preventing an incident of this nature.

Note that hazardous materials, including large quantities of fuels, have historically been handled in Gastineau Channel and Lynn Canal. By increasing the use of hazardous materials in industrial facilities there is a corresponding increase in the cumulative probability that a spill might occur. It is important to differentiate here between an impact and the probability of impact. There is no question that the probability of impacts will increase but it is by no means certain that a large material spill will occur.

121.2

The FEIS includes new information on the expected effects of chorine use at the Kensington Project.

121.3

The FEIS considers use of hydrogen peroxide destruction as well as alkaline chlorination.

121.4

Rotating shift schedules have been used for decades in the mining industry and are inherently part of the evaluation.

121.5

Sodium cyanide has been safely used in mining for over 100 years. The operating practices established over this long history of use make the assessment provided in the DEIS accurate.

121.6

The explosives storage and LPG tank will be 1000 to 1500 feet apart with numerous trees between. The explosives storage will be 50 to 100 feet higher in elevation and surrounded by an earthen berm. MSHA regulates location and construction with regard to safety considerations.

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EPA regulations require that cyanide concentrations be analyzed and reported as total cyanide. There are no federal or State standards for WAD or free cyanide as these parameters are included in the measurement of total cyanide.

121.8

The FEIS has configured all alternatives using alkaline chlorination for cyanide destruction to include dechlorination of the mill effluent stream.

121.9

Please see response no. 121.2.

121.10

There would be no tsunami associated with the described catastrophic dam failure scenario described in the DEIS. Tsunamis are related to seismic events and not to the mud flow type event analyzed.

As stated on page 4-35, DEIS, initial deposition along the beach and into Lynn Canal would cover approximately 20 acres. As the material is dispersed by wave action it would spread out. At a depth of 1 foot of material, approximately 560 acres could be inundated.

Marine bottom dwellers would be impacted primarily by mud smothering a specific area of the bottom of Lynn Canal.

121.11

The SPCC Plan will provide prevention, containment and control measures for large and small spills.

121.12

The section on potential toxicity of tailings pond waters to terrestrial wildlife has been revised and expanded in the FEIS. Aquatic organism water quality standards are not applicable to terrestrial wildlife species. These standards can only be applied to organisms that live within the aquatic environment. The U.S. Fish and Wildlife Service is currently conducting research into the levels of cyanide, in combination with heavy metals, that are safe for terrestrial wildlife (birds and mammals). At this time no standards have been developed and drinking water standards are the most appropriate toxicity levels to be applied to terrestrial species which may occasionally land on or obtain drinking water from the tailings pond. Impact analysis using drinking water standards for terrestrial wildlife provide for a considerable margin of safety since these standards are based on continuous human use of a water source. During operation, the tailings pond will not support any suitable cover or food sources for wildlife and is expected to only receive occasional use by wildlife for resting or obtaining drinking water.

P. 4-32: A NPDES permit would only regulate, or provide a standard for, total cyanide. There is currently no standard for WAD cyanide for waters of this region. Individual standards should be provided for WAD cyanide, free cyanide, iron cyanide, and total cyanide, as WAD measurements are currently the only means of reliably measuring potentially toxic levels of cyanide to aquatic life (Mudder 1990).

P. 4-32: Free cyanide can be eliminated by increasing chlorine to "measurable detectable levels ... in the mill process effluent." This is not an acceptable trade-off. The DEIS should clearly state whether chlorine is to be increased, and such an increase should be reflected in overall quantities of this material to be used; there is little mention, also, of monitoring for chlorides at the outfall.

P. 4-35: No worst-case scenarios presented for chlorine shipment incidents, which would be far more dangerous to the marine environment than cyanide.

P. 4-35: In discussing catastrophic dam failure, the DEIS does not consider or describe any resultant tsunami effect on the surrounding region. In describing the impacts to marine life, which would be severe, the DEIS only says, "... [severe effects] would be expected to occur in the immediate area." This should be addressed more completely to include an estimation of the boundaries of impacted area, the projected plume chart, zones and estimates of toxicity, types and numbers of impacted species, etc., with short- and long-term effects.

P. 4-37: The DEIS does not reference, nor provide mitigation for, the chronic, relatively small fuel spills which are the leading cause of industrial site fuel contamination. Equipment fueling stations should have berms, impermeable liners, etc.

P. 4-32: In a section discussing wildlife, the DEIS is using drinking water standards (0.2 mg/l) for total cyanide in the tailings pond, rather than fish/wildlife water quality standards which are considerably more strict. Further, toxicity levels were attained by studying juvenile trout in South Dakota; more relevant information should be attained studying marine fish/wildlife, saltwater habitat, Southeast Alaska climates, etc.

P. A6: References a 43,000 gallon LPG storage container; earlier references cite a 1.7 million gallon container. The DEIS fails to examine the alternative of several smaller LPG storage tanks as opposed to one large one.

P. A7: Ammonium nitrate, dynamite, blasting caps, etc., are not quantified, and the DEIS does not discuss the number of shipments, type of transport, etc. The DEIS does not reference studies of blasting effects on wildlife, avalanches, mudslides, etc. due to daily blasting.

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121.13 Smaller LPG storage containers would require a larger number of containers and would increase the amount of disturbance area required for LPG storage. Studying different LPG storage configurations would not respond to any scoping issues.

121.14 FEIS Chapter 4, Transportation, discusses materials transportation.

Controlled surface blasting will take place only during the construction phase of the project; the remainder of the blasting will take place underground. Chapter 4, Wildlife, addresses wildlife impacts. There are no anticipated effects from avalanches or mudslides.

121.15 Comment noted.

121.16 ANFO will be shipped to the site pre-mixed.

121.17 Note that the referenced section is the Applicant Proposal. See also response no. 121.1.

121.18 The emergency high volume fans are for protection of employees in the chlorine handling room. As you correctly point out, a worst case accident could involve evacuation of the entire camp. The small, confined project area makes it more practical to assume that the entire camp would be evacuated than to rely on a plume model to predict areas of contamination.

121.19 An Emergency Response Plan in conjunction with a Materials Control and Containment Plan would be developed during the permitting process. Employee safety training would be required as part of employment procedures. The comment refers to information supplied in the Applicant Proposal. We have noted your comments as they apply to the impact evaluation.

P. A9: The chlorine in the "protective process plant storage rack," the fueling station, office and leach process areas are very close together. An explosion at the fueling station might rupture the chlorine tank, damage the leach area, etc. Layout should be subject to a hazard analysis using worst-case scenarios as benchmark.

P. A13: The DEIS references underground magazines; there is no mention, however, of the mixing area where ammonium nitrate and fuel oil are combined to create ANFO.

P. A20: Chlorine: storage use is vague. The DEIS doesn't specify how many one-ton containers would be stored at the dock facility; doesn't specify where at the dock facility they would be stored; nor does it say how long containers would be stored there or how/when they would be transferred to the plant. No possibility of a chlorine spill/leak into the marine environment is mentioned; consequences are not addressed, much less in terms of worst case scenario. Total chlorine to be stored in the "protective process plant storage rack" is not quantified. Total amount of chlorine to be used in the project is anywhere between 175.2 tons and 306.6 tons annually; this should be clearly quantified rather than alluded to in vague terms or formulas (6 lbs./T. concentrate).

It is questionable whether emergency high volume fans would be effective in the event of a worst-case chlorine leak, which would impact the entire camp and require immediate evacuation of all personnel. Due to low average wind speeds, chlorine wouldn't readily be dispersed by prevailing winds. Again, a hazard analysis or, at least, "plume charts" should be done to determine which areas of the camp -- if not all -- would be severely impacted by a chlorine leak.

P. A20: All personnel, including those working in the office, should be trained in hazardous material emergency response, evacuation, etc.

Full chem suits should be required, in addition to face mask self-contained breathing apparatus, for first-responders to chemical incidents.

P. A30: Design of leach facility: the surrounding berm currently is designed to hold 1.5 times the capacity of only one leach tank; this should be based on worst-case scenario, or 110% capacity of all leach tanks.

P. A30-31: The DEIS does not reference ammonia gas detectors.

P. F3: (RG-2) Any hazardous materials management shortcourse should be more intensive and presented on more than an annual basis. Drills, alarms, simulated accidents, and evacuations should all be incorporated into hazmat mgmt. plans and conducted at least quarterly.

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P. F3: (RG-6) "Periodic" inspection of storage facilities and mixing tanks should be clearly specified.

P. G1: Pre-employment training at UAS should be required rather than "encouraged" for new employees with little mining background/training. Further, drug/alcohol screening should be frequent and random.

SOLID WASTE:

P. 2-17: The DEIS assumes that the City and Borough of Juneau, or neighboring municipalities, will be able to dispose of the Kensington's non-combustible solid waste materials. Given that Channel Sanitation is operating at 70% capacity, that the proposed AJ Mine would severely impact this landfill, and that Channel Sanitation is currently unable to obtain financing and/or permission to install a third incinerator on site, the DEIS is overly optimistic in its assumption that the municipality will be able to process any of the solid waste from the Kensington and its' related households.

Further, the DEIS makes no attempt to quantify the amount of non-combustible waste the Kensington would generate, nor does it attempt to determine how much additional solid waste would be generated within the CBJ by Kensington-related households.

The DEIS does not present a cumulative impact of solid wastes generated by both the AJ and the Kensington mines, and related households, which would have to be processed by municipal landfills.

The DEIS makes no contingency plan in the event that the CBJ cannot process the added waste materials, except to say that "another municipality" might be considered.

HAZARDOUS WASTE:

The DEIS does not quantify the hazardous wastes to be generated by the Kensington, except to state that it will be a "SQC" [small quantity generator] of materials. The DEIS for the AJ Project made the same claim, but upon review, their figures clearly placed them in the Large Quantity Generator classification. Further, the Kensington DEIS does not identify the types of hazardous wastes to be generated; these should be identified and classified by EPA hazardous waste numbers/hazard codes. It has not been specified how long these materials will be "temporarily" stored on site, and does not outline a detailed disposal plan, e.g., types of containers, annual numbers of barges, destination, contingency plans, possible accidents, etc.

121.20

The EIS serves, among other things, to notify responsible local officials of expected changes that could impact services under their jurisdiction. Juneau's solid waste disposal problems are looming on the horizon and the community will be forced to address this issue soon. Approval of the Kensington Project would merely move the day of reckoning forward in time.

121.21

As a small quantity generator, Kensington would be allowed to store no more than 6000 kg on site at any one time. Total storage time onsite could not exceed 270 days (40 CFR 262.34) without additional licensing. The small quantities could easily be shipped out on the same barges that print shops, dry cleaners, body shops and the myriad other small quantity generators in southeast Alaska use.

The DEIS assumes that Juneau has a waste oil disposal system. This is not so; in the past, waste oil has been collected by Red Samn Construction to be used at an asphalt plant, but this will most likely not continue after the 1991 construction season. Further, Juneau's ability to dispose of waste oil depends entirely on a volatile market in which there is no guarantee of demand. To assume that Juneau has the ability to dispose of Kensington's waste oil is, to say the least, overly optimistic.

OTHER COMMENTS:

P. 3-52: The sections dealing with historic sites are confusing; they first say they haven't been studied, then they say (p. 4-57) that "it is unlikely that any adverse effects would occur to cultural resources. The historic resources have been documented." The DEIS should clarify this section.

The waste rock plans appear to be extremely vague; given the recent problems at Greens Creek, I hope the USFS will demand thorough and complete studies regarding waste rock quantities and disposal for the Kensington Venture.

P. 3-5 SEISMIC ACTIVITY: Earthquakes have only been tracked back to 1970, or less than 25 years. The area has experienced 7.7 and 8.0 earthquakes in the past 100 years; further, the DEIS admits (p. 3-5) "the selection of a 200 km radius for earthquake data was subjectively determined" but then claims that "earthquakes occurring outside the 200 km radius would not have any damaging effects to the proposed project." I'm concerned that a scientific assessment is being based on an admittedly subjective selection of parameters. There is no mention of tsunami impacts following large earthquakes whose epicenter lies outside this 200 km radius.

P. 3-49 - Nonresident Recreation: Tourism data does not reference any Alaska Division of Tourism studies, and only briefly discusses possible impacts. This section makes very general, and in some areas, misleading assumptions as to the type of visitor to this region. P. 4-55: DEIS references 225,000 visitors in summer 1990 but references no source of information. "... [t]his is likely to have a small impact on the shipboard visitor's experience." This is a purely subjective assumption, particularly in light of the fact that visitors come to Alaska for its unspoiled scenic beauty.

P. 4-52: Bald Eagle nest site - mentions that the bulk fuel storage site is 1,000 feet from a nest site. "Normal operational activities would not be expected to affect this site during the nesting season." The DEIS is vague as to what this means, e.g., whether this means they'll shut down during the nesting season, or activities are too far away to impact the nest.

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121.22 CMS is an EPA permitted waste oil disposal company operating in Juneau (E. Polley, 1991).

121.23 Page 3-52, DEIS, says that potential prehistoric sites have not been studied. Page 4-57 says that historic sites have been documented.

121.24 See Chapter 2, page 2-4, DEIS, for discussion of waste rock handling and disposal.

121.25 Please see FEIS Chapter 3 for a discussion of seismic risks.

121.26 Chapter 3, DEIS, presents a description of the affected environment (baseline information), while impacts to the environment are presented in DEIS Chapter 4. The information presented was taken from data compiled by the Forest Service as cited on DEIS page 3-49. DEIS Page 4-55 cites Lendaro, (1991) as the source of the 225,000 visitors in the summer of 1990.

121.27 Guidelines in the current Interagency Agreement (5/15/90) between the USFWS and the Forest Service in the Alaska Region establish a 330 foot management zone for protection of bald eagle nest sites. The bulk fuel storage facility would be established and operated outside of this zone and would not be expected to have any adverse effect on the closest bald eagle nest site (approximately 1,000 feet away) even during the breeding season. However, if construction of this facility requires any blasting, Interagency Agreement guidelines require blasting activities to occur during the non-breeding season since it is recognized "that blasting within one-half mile of eagles or active nests can result in significant disturbance." Interagency Agreement guidelines further prohibit repeated helicopter flights within one-fourth mile of active bald eagle nests. Prior to initiation of any project development activities, the Forest Service will consult with the USFWS to develop any other mitigation measures that would be appropriate for protection of bald eagles with respect to the Kensington Project.

P. 4-68: Table 4-23 - The next EIS should include one more column which shows total net gain or loss of revenues to the CBJ. A cursory review shows a total net loss to CBJ of \$883,000.

P. 4-71: "[Mine] closure would not likely be simultaneous which would lengthen the period of emigration and moderate closure impacts on Juneau." It would be helpful to show timelines and estimated population declines under various scenarios of closure for the AJ and Kensington given the difference in orebodies and the fluctuation in the price of gold; at what market price would the Kensington have to shut down; how does this compare to the Kensington?

P. 4-71: Health and Social Services - "Other health services [other than mental health/chemical dependency services] would have adequate capacity to accommodate the demands generated by development of both mines." This assumption is probably rather optimistic, if not subjective. For example, by failing to conduct full hazard analyses on both projects, the DEIS does not adequately address Bartlett Memorial Hospital's capability to respond to large-scale emergencies.

P. 4-71: CBJ Revenues and Expenditures: AJ fiscal surplus is not specified, no estimation of cost to CBJ of Kensington, etc. The DEIS provides the following financial advice: "This surplus could be used to alleviate some of the deficiencies in services or facilities, or be placed in the budget reserve to moderate the impact of expected lower state revenues." I do not believe financial planning falls under the purview of the USFS and is, essentially, sleight of hand to direct attention away from the excessive cost to CBJ (see p. 4-68, Table 4-23).

P. 4-72: Traffic -- underestimated again. "Mine workers would add to traffic only on their days off." Employees of the Kensington would have 7-14 days off in a stretch, so in fact, Juneau would experience a traffic increase of about 87-175 off-duty mine workers at any given time from the Kensington project alone. I'd expect a direct-correlation increase in DWI, also, given the number of days off duty.

P. 4-73: Vessel Traffic does not list winter activity for the following types of vessels: cruise/tour ships, fishing boats and pleasure craft.

P. 4-74: Airport traffic: makes the unfounded assumption that Kensington workers will be dropped off by a spouse or a friend. In determining overall impact to airport traffic, assumes that Kensington helicopter flights would coincide with regularly scheduled commercial flights; no schedule has been proposed which supports this assumption. Further, there is no discussion about possible impacts to airport parking should car-pooling or the "drop-off" theory prove to be wrong.

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121.28
FEIS Chapter 4 presents revised Revenue and Expenditures numbers.

121.29
While this information would be interesting, it would do no more for our ability to predict impacts than our general knowledge that there is some gold price below which both Kensington and AJ would shut down. Our prediction uncertainty would then merely revolve around a different issue: gold price prediction.

121.30
While some industrial type accidents are expected to occur, modern industrial and mining safety practices will be implemented at the project. It is the responsibility of the Mine Safety and Health Administration to insure that laws and regulations are enforced.

121.31
Please see DEIS page 4-68, Table 4-23 for a complete statement of expected impacts to CBJ revenues and expenditures. This estimate is updated in the FEIS.

121.32
The DEIS statement is correct as stated and may, in fact, be an overstatement of impacts since most workers on days off would likely avoid rush hour travel.

121.33
The information on vessel types and numbers was supplied by the U.S. Coast Guard. The Coast Guard does not report winter numbers for cruise/tour ships, fishing boats and pleasure craft.

121.34
The assumption is founded in human economic behavior that says it is extremely unlikely that workers will be willing to pay airport parking fees for a two week period while at work. The DEIS determined that the airport facilities are adequate to handle any Kensington project related increase during peak activity periods. By extension the facilities are also adequate during off-peak periods. The analysis looked at the worst case precisely because flight schedule information is not available.

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P. 4-74: Assumes that barges can be scheduled for "non-fishing days." I'm not certain how, or if, that could be done, particularly in light of sudden/emergency openings and closures of fishing grounds. Also references 159 northbound and 159 southbound scheduled vessels during the summer; the DEIS does not specify whether this is number of vessels or trips.

121.35

P. 4-75: Cumulative marine traffic: The DEIS presents a grossly inadequate treatment of this issue. For example, Kensington materials shipped to Juneau and transferred to smaller carriers, or stored for later shipment, are not accounted for. The DEIS should attempt to assess the cumulative mine-related traffic in Lynn Canal, Gastineau Channel, and SE Alaska, for all construction/production phases, including materials import to export of solid and hazardous wastes.

121.36

P. 4-75: Cumulative driver traffic: also grossly inadequate. Makes the simplistic assumption that AJ traffic will head southbound through town, while Kensington traffic will head toward the airport. Does not take into account the increase in mining-related traffic, e.g., families, increased numbers of cars, off-duty miners, the creation of mine-related industries, etc.

121.37

NPDES PERMIT:

The DEIS quantifies TDS (total dissolved solids) in mg/l; accumulated TDS is not quantified, however. For example, over a ten year period, the mixing zone is expected to receive:

Arsenic	875 lbs.
Copper	5033 lbs.
Iron	273,542 lbs.
Lead	7659 lbs.
Total Cyanide	4923 lbs.
Free Cyanide	3610 lbs.
WAD Cyanide	3829 lbs.

121.38

The DEIS makes no attempt to quantify the amount of sulfates, xanthates, cyanates or thiocyanates expected to be present in the effluent.

121.35

Page 4-74, DEIS, states that Kensington Venture would cooperate with the southeast Alaska Gillnetters and other Lynn Canal users to establish an optimum schedule for all parties.

The 159 northbound vessels become 159 southbound vessels (or vice versa) for a total of 159 scheduled round trips during summer months.

121.36

The bulk of supplies bound for the Kensington Project are expected to be shipped in dedicated barges directly from Seattle. The only regular exception would be shipments of perishable foodstuffs.

121.37

Please see the DEIS discussion of Juneau traffic (DEIS page 4-72).

121.38

Please see FEIS Chapter 4 for a more thorough treatment of discharge water quality.

APPENDIX B

Biological Assessment

INTRODUCTION

The Endangered Species Act of 1973, as re-authorized in 1982, requires Federal agencies to "insure that any action authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat of such species." The purpose of the Act is "to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved" and "to provide a program for the conservation of such endangered species and threatened species... ."

Section 4 of the Act (Determination of Endangered Species or Threatened Species) grants the Secretary of the Interior power to determine whether any species is considered threatened or endangered, based on the present status of the species such as population numbers, limited habitat, disease, existing regulatory mechanisms, or any man-made influences jeopardizing the species' continuing existence.

Section 7 of the Act (Interagency Cooperation) specifies that, to more effectively carry out the purpose of the Act, all other Federal departments and agencies shall, in consultation with and with the assistance of the Secretary, utilize their authorities by "taking such action necessary to insure that actions authorized, funded, or carried out by them (Federal departments and agencies) do not jeopardize the continued existence of any listed species (pursuant to Section 4) or result in the destruction or modification of critical habitat of such species." The consultation process is designed to assist Federal agencies when complying with the Act, and authority of consultation has been delegated by the Secretary of the Interior to the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) for the species over which these agencies have jurisdiction. The consultation process involves several phases. First, a general description of the proposed action and a formal request for a listing of proposed, candidate, and listed

endangered and threatened species potentially affected by the proposed action is submitted to the USFWS and the NMFS by the affected agency. The USFWS and NMFS respond with a list of proposed, candidate, and listed species within the proposed project area. When the project is a construction project, the agency then prepares a Biological Assessment which identifies the project, details the biology of the species on the lists submitted by the USFWS and the NMFS, analyzes the cumulative effects of the project, and determines if there is likely to be an effect (either beneficial or adverse) on any listed, proposed, or candidate species. If a "may affect" determination is made, the agency must request formal consultation with the USFWS and NMFS.

Formal consultation involves USFWS and NMFS consideration of the proposed project and how it may affect the biology of any listed, proposed, or candidate species, including the magnitude of such effects and potential cumulative effects. Based on this information, a Biological Opinion is issued by the USFWS and NMFS which states one of three possible conclusions: the proposed action (1) may promote the continued existence of the species, (2) is not likely to jeopardize the continued existence of the species, or (3) is likely to jeopardize the continued existence of the species. Reasonable and prudent alternatives must be addressed by the USFWS and NMFS as part of the Biological Opinion when a determination is made that the proposed project is likely to jeopardize the continued existence of the species.

In May 1990, the Forest Service initiated informal consultation with the USFWS and the NMFS by requesting a list of threatened, endangered, or candidate species potentially occurring within the project area. This request was related to four major resource categories (vegetation, wildlife, fisheries, and marine mammals) as required by Section 7 of the Endangered Species Act.

The USFWS (letter dated 6/7/90) and NMFS (letter dated 5/15/90) identified three threatened or endangered species potentially occurring in or near the project area. These were peregrine falcon (*Falco peregrinus*), humpback whale (*Megaptera novaeangliae*), and Steller's

sea lion (*Eumstapias jubatus*).

The American peregrine falcon (*Falco peregrinus anatum*) is listed as endangered. This species only occurs as a migrant in Lynn Canal and is not expected to be affected by project development. The non-migratory Peales' peregrine falcon (*Falco peregrinus pealei*) may nest within Lynn Canal but is not listed as threatened or endangered.

Field studies were conducted at the Kensington Project area during the period August through September, 1990 in order to identify plant species present in the study area. The result of these studies are presented in Chapter 3 of the DEIS. No threatened, endangered, or candidate plant species were encountered and none were expected in the study area.

A discussion of the freshwater fisheries is also presented in Chapter 3 of the DEIS. No threatened or endangered fish species were encountered during the freshwater field study programs, nor were they expected to be present.

THREATENED AND ENDANGERED MARINE MAMMAL SPECIES

Humpback whales and Steller sea lions are the only threatened or endangered species expected to occur in the vicinity of the proposed project. Although these species are known to occur in the area, "there are no critical habitats nor areas currently being considered for designation as critical habitats for either of these species near the project site" (Pennoyer, 1990). A detailed discussion of these species, their status and distribution, and potential for adverse impacts follows.

HUMPBACK WHALE

Status and Distribution. Humpback whales (listed as endangered) are seasonally present in Southeast Alaska during the summer to fall feeding season. They migrate south in the winter to breeding grounds in either Hawaii or Mexico (Perry and Baker, 1986). Southeast Alaskan waters comprise the primary feeding

grounds for a single herd estimated to range between 29 and 372 individuals (Baker et al., 1985). It is estimated that the Southeast Alaska herd represents from 17 to 25 percent of the entire North Pacific population (Perry and Baker, 1986). This herd appears to remain geographically segregated from other Alaskan humpback whale herds in Prince William Sound and the western Gulf of Alaska coastline.

The distribution of the Southeast Alaska herd is variable within their range. No specific published information regarding humpback whale use of Lynn Canal was located, and an estimate of numbers of humpback whales in Lynn Canal is unavailable (NMFS, 1974). However, they are known to occur in the canal during the summer to fall feeding season. Humpback numbers and occurrence in Lynn Canal is variable, but they are common in some years (Nanney, 1990). Their occurrence is most likely related to the presence of concentrations of small fish. Humpback whales have been observed feeding off of Point Sherman usually from April through June (Nanney, 1990). ADF&G biologists conducting research on coho salmon in Berners Bay during the summer occasionally observe humpbacks in Lynn Canal. Individual humpback whales also have been observed occasionally in Lynn Canal near the project area by Kensington personnel and contractors during aerial transport flights to and from the project area. Kayakers and recreationists report frequent sightings of two to three humpback whales in the Berners Bay area (Falk, 1991).

Important identified feeding areas in Southeast Alaska include Glacier Bay and adjacent portions of Icy Strait, Frederick/Stephens Sound, and Seymour Canal (Perry et al., 1985). Some areas of Glacier Bay and Icy Strait are annually occupied by the same individual whales while the Frederick Sound and Stephens Passage areas seem to contain relatively transient groups of whales that range widely over a large area (Perry and Baker, 1986). Whale surveys in Stephens Passage, encompassing the Doty Cove and Grand Island area south to a line between Point Hugh and Point League in 1984, showed generally increasing numbers over the summer with a substantial increase during early September

(Baker, 1984). However, in 1985 large numbers were seen in an area of Frederick Sound rather than Stephens Passage (Perry and Baker, 1986). Thus, the year to year distribution of humpback whales in Southeast Alaska waters appears to be variable.

Humpback whales feed on schools of herring, capelin, juvenile walleye pollock, sandlance, and euphausiids (Perry and Baker, 1986). In the Stephens Passage area, euphausiids appeared to be the predominant prey item during 1984 (Baker, 1984). Humpbacks appear to feed on a variety of fish species in the Icy Strait - Glacier Bay areas. In general, it appears that the Icy Strait and Glacier Bay areas are important early summer feeding grounds while the Stephens Passage and Frederick Sound area are important late summer to fall feeding grounds (Perry and Bakers, 1986).

Potential for Adverse Impacts. Construction and operation activities for the proposed project have the potential for affecting humpback whales through two possible mechanisms: (1) marine vessel traffic or accidents at sea during the summer and fall feeding season and (2) introduction of trace metal contaminants into the marine environment, their uptake by prey items of the whale, and subsequent ingestion and accumulation by the whales.

Marine traffic destined to the proposed Kensington Mine marine terminal would pass through areas frequented by humpback whales during their summer and fall feeding season. Potential affects to whales could include displacement of whales due to vessel traffic and noise and physical harm to whales resulting from inadvertent whale/vessel collisions. Studies in Glacier Bay on the interaction between vessels and humpback whales (Baker et al., 1982; Baker et al., 1983) indicated that whales were least affected by vessels traveling at consistent and relatively slow speeds.

No humpback whale concentration areas are known in the vicinity of the project area, although humpbacks occasionally occur offshore in Lynn Canal and feed near Point Sherman. The Kensington Venture would use vessels within Lynn Canal primarily for transport of construction materials, equipment, and bulk

supplies. These supplies would typically be shipped by barge. Barges travel at slow and relatively constant speeds. This added vessel traffic is not expected to have any noticeable affect on the distribution or behavior of whales within Lynn Canal.

A vessel accident that causes a fuel or chemical spill into waters containing feeding whales could result in ingestion of contaminated prey by the whales or direct contact of whales with the spilled material. The probability of occurrence of such an event is difficult to predict but is judged to be low due to the relatively large geographic area involved and the relatively low frequency of marine vessel trips required to deliver supplies during mine operation.

Contamination of prey items (such as euphausiids or herring) with trace metals and their subsequent ingestion and bioaccumulation is another potential mechanism of impact on humpback whales from operation of the proposed project. The likelihood of this event is considered to be low. Trace metals can be bioaccumulated by marine species, but biomagnification of trace metals from low to high trophic levels generally does not occur in the marine environment (Young and Ellis, 1983; OTA, 1987).

Mercury, especially in the chronically toxic form methylmercury, is the only trace metal that has been demonstrated to biomagnify through the marine food chain; selenium and zinc have been reported to have the potential to biomagnify (Bryan, 1985; OTA, 1987). Mercury concentrations projected to occur in tailings pond effluent discharged to the marine environment were projected to be below the detection limit of 0.001 mg/l (HDR/Ott Engineering, Inc., 1990). The detection limit is higher than the saltwater chronic exposure criterion of 0.000025 mg/l, which is based on methylmercury rather than mercury (EPA, 1986) but is lower than reported mercury concentrations in areas where impacts on marine species and human consumers have been identified (OTA, 1987). The average levels of selenium and zinc projected for the tailings pond discharge, less than 0.005 mg/l and less than 0.01 mg/l, respectively, (HDR/Ott Engineering, Inc., 1990)

are lower than marine standards for chronic exposure in saltwater (EPA, 1986).

Moreover, the potential for these impacts to humpback whales is expected to be low since Lynn Canal is not an area that appears to be regularly frequented by large feeding groups of humpback whales, as seen in the Glacier Bay - Icy Straits - Stephens Passage area. In addition, even if prey items come into direct contact with discharged effluent from the outfall, they are not expected to bioaccumulate metals. (See *Aquatic Resources - Marine, Chapter 4*).

Based on the above analysis, the Forest Service has concluded that construction and operation of the proposed project would not adversely affect humpback whale populations in Lynn Canal.

STELLER SEA LION

Status and Distribution. The Steller sea lion was listed as a threatened species November 26, 1990 (55 FR 49204). Steller sea lion numbers (based on rookery surveys) appear to be declining in the western, central, and eastern Aleutian Islands, the Pribilof Islands, Bristol Bay, and western and central Gulf of Alaska. The Southeast Alaska population, however, appears to be relatively stable (Federal Register, July 20, 1990). Abundance estimates made during the 1970s ranged from 245,000 to 290,000 animals worldwide (Federal Register, July 20, 1990). Hoover (1988) reported a 1984 population estimate of Steller sea lions for Alaska of 196,484 animals with 12,000 of these comprising the Southeast Alaska population. A 1989 survey of Alaska rookeries and haulout areas provided an estimate of 53,000 as a minimum number in Alaska (Federal Register, July 20, 1990).

Steller sea lion rookery and haulout habitat includes rock shelves, ledges, and slopes, as well as boulder, cobble, gravel, or sand beaches (Hoover, 1988). Marine habitats used by Steller sea lions generally include surface and midwater coastal regions within 45 km of shore (Hoover, 1988). Sea lions are gregarious and large groups often use traditional haulout and rookery sites. These sites are typically located on remote offshore islands. The majority of identified haulout and rookery sites

in Alaska are located on islands in the Gulf of Alaska and the Aleutian chain (Hoover, 1988). Only four known rookery sites are located in Southeast Alaska. One is on Forester Island (Hoover, 1988; Loughlin et al., 1984), located in the Gulf of Alaska to the northwest of Dixon entrance. Two others are Hazy Islands and White Sisters near Sitka (Pennoyer, 1991). The fourth rookery is located on the western shore of Lynn Canal approximately 2 miles north of Yeldalgalga Creek (Rusanowski, 1991). All are remote from the project site.

The largest haulout site in the region is located on Benjamin Island, approximately 22 miles south of the project site at the north end of Favorite Channel (Pennoyer, 1990). Other haulout sites include one approximately 4 miles north of Point Sherman (Staska, 1990; Stein, 1991) and two sites at the north end of Lynn Canal, Point Seduction (Bruce, 1990) and the coast east of Flat Bay (Nanney, 1990). Approximately 40 to 60 sea lions have been observed in late summer at the haulout site 4 miles north of Point Sherman (Stein, 1991).

Small numbers of Steller sea lions also have been observed hauled out along the coast about 5 miles south of Point Sherman in May (3 to 4 sea lions) and from the Slate Creek Cove area south to Point St. Mary in the spring and summer (15 to 20 sea lions) (McCarthy, 1990).

Sea lion rookeries are occupied in the spring and summer while haulout areas are used throughout the year (Hoover, 1988). Steller sea lions are extremely mobile and undergo seasonal movements over long distances within their range. Haulout areas are different from winter to summer in Southeast Alaska. During the summer, Steller sea lions are typically dispersed in the more exposed water offshore while the inside waters are used during the winter (Hoover, 1988). Steller sea lions are opportunistic feeders consuming a wide variety of demersal and pelagic fish as well as invertebrates. Important prey items include herring, flatfish, octopus and squid, walleye pollock, and salmon (Hoover, 1988).

There is no published or unpublished survey information available for Steller sea lion numbers or habitat use in Lynn Canal; the

rookery and haulout sites are typically the only habitats that have been surveyed (Calkins, 1990). However, due to the presence of the haulout site on Benjamin Island and another 4 miles north of Point Sherman, it is expected that individual and small groups of Steller sea lions will occasionally occur foraging in or moving through Lynn Canal waters in the vicinity of the project area.

Sea lions are commonly observed in the Point Sherman area by gillnetters during the summer months (Nanney, 1990; Bruce, 1990). Four sea lions were observed approximately 100 meters offshore swimming past the access point to the project site in May 1990. Sea lions are most likely to occur near the south end of Berners Bay in the spring when concentrations of spawning herring are present and near Point Sherman during the summer months when salmon pass through the area. This would be especially true in the spring when concentrations of spawning herring are present (Calkins, 1990).

Potential for Adverse Impacts. Potential effects on Steller sea lions could occur through marine vessel accidents, near shore accidental spills, contamination of sea lion food items, and human disturbance of small haulout areas in Slate Creek Cove and between Point St. Mary and Point Sherman. Should a vessel accident occur and fuel or chemicals are spilled into the water, there is a potential for direct exposure of sea lions to the spilled material or ingestion of food items that are contaminated. Effects of a spill resulting from a vessel accident would be expected to only affect a small number of animals, if any, unless the accident occurred in close proximity to Benjamin Island or the haulout site 4 miles north of Point Sherman. The increase in potential for this type of accident, with project development, would be only slightly higher than the risk associated with existing barge traffic in Lynn Canal. The probability of occurrence of such an event is difficult to predict but is judged to be low due to the relatively large geographic area involved, the dispersal of sea lions through the area, and the frequency of marine vessel trips to deliver supplies.

Ingestion of food items that have accumulated trace metal contaminants discharged from the tailings pond into Lynn Canal could occur but this is judged to have a low probability of adverse effects for the same reasons discussed above the humpback whales. Occasional sea lion foraging in the Point Sherman area of Lynn Canal may result in some exposure to a relatively small proportion of the southeast Alaskan sea lion population but is not expected to present a risk to the population as a whole. In addition, even if prey items come into direct contact with discharged effluent, they are not expected to bioaccumulate metals or other potentially toxic substances. (*See Aquatic Resources - Marine, Chapter 4, FEIS*).

Low-level helicopter flights or ferry boat use in the vicinity of haulout sites in Slate Creek cove or from Point St. Mary to Point Sherman have the potential to cause temporary abandonment of these sites by Steller sea lions. However, the current helicopter contractor to the Kensington Venture has indicated the flight path would avoid coastal areas except in the immediate vicinity of the project landing site. In addition, helicopter flights would maintain an altitude of at least 2,000 feet whenever weather and safety considerations permit. Barge traffic, in order to avoid potential shoreline obstructions, would not be expected to pass within 1,000 feet of sea lion haulouts. Disturbance to sea lion haulouts along marine vessel and helicopter flight travel corridors is, therefore, not expected to occur. Aircraft flights and boat traffic are not expected to have any noticeable effect on sea lions feeding or travelling through the area.

Based on this analysis, the Forest Service has concluded that construction and operation of the proposed project would not adversely affect humpback whale populations in Lynn Canal.

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APPENDIX C

Glossary

AAC

Alaska Administrative Code - The regulations adopted by state administrative agencies to implement legislative acts passed by the Alaska Legislature.

abandonment

Discontinuing project operation, salvaging project facilities and rehabilitating the site when future mining is determined to be technically or economically infeasible.

ablation

The combined processes by which a glacier wastes.

ACMP

Alaska Coastal Management Plan

acre-foot

The amount of water which covers an acre of land to a depth of one foot; (ac ft) equal to 325,827 gallons.

ADCRA

Alaska Department of Community and Regional Affairs

ADEC

Alaska Department of Environmental Conservation

ADF&G

Alaska Department of Fish and Game

ADNR

Alaska Department of Natural Resources

ADOT/PF

Alaska Department of Transportation and Public Facilities

adit

A horizontal or nearly horizontal access tunnel into a mine from the surface.

adsorb

To take up and hold by the physical or chemical forces of molecules.

ADT

Average daily traffic measured in number of vehicle trips per day.

AEL&P

Alaska Electric Light & Power

aerial

Consisting of, moving through, found or suspended in the air.

aerobic

Living or taking place in the presence of oxygen.

agglomerate

To gather into a mass or cluster.

airshed

An area of land over which the pattern of air movement is influenced by major topographic features.

alkaline chlorination

A treatment method by chemical reaction used to break down the toxic cyanide radical (CN⁻) into non-toxic sodium bicarbonate, nitrogen, sodium chloride, and water. This method may be used to treat mill effluent and tailings.

alluvium

Material, including clay, silt, sand, gravel, and mud, deposited by flowing water.

alternatives

A choice of two or more things; for NEPA purposes, alternatives to the proposed action must be examined in an EIS. The discussion of alternatives must "sharply [define] the issues and [provide] a clear basis for choice...by the decision maker and the public." (40 CFR 1502.14).

ambient

The environment as it exists at the point of measurement and against which changes (impacts) are measured.

ameliorate

To influence or alter conditions so as to cause improvement.

anadromous

Type of fish that migrate upstream from saltwater to freshwater to spawn (breed), such as salmon, some trout and char species and shad. Also describes the fishery or habitat used for spawning by these species.

ANILCA

Alaska National Interest Lands Conservation Act.

ankerite

A mineral, a ferroan variety of dolomite; that is, iron replaces the magnesium. CaCO_3 (Mg,Fe,Mn) CO_3 .

aquatic

Growing, living in, frequenting or taking place in water; in this EIS, used to indicate habitat, vegetation and wildlife in freshwater.

aquifer

A zone, stratum or group of strata acting as a hydraulic unit that stores or transmits water in sufficient quantities for beneficial use.

aspect

The direction toward which a slope faces.

attainment area

A geographic region within which National Ambient Air Quality Standards (NAAQS) are met; three categories of attainment are defined - Class I, Class II and Class III - on the basis of the level of degradation of air quality which may be permitted.

audible

Capable of being heard.

background

The distant part of a landscape located from 3 to 5 miles to infinity from the viewer.

BACT

Best Available Control Technology - pollution control as defined by EPA for a specific emission or pollutant stream and required for meeting pollution control regulations.

ball mill

Equipment used to reduce ore particles to a finer size. It includes a large rotating cylinder

partially filled with steel balls.

barrel

A U.S. unit of measurement equal to 42 gallons of petroleum.

base flow

A sustained or fair-weather flow of a stream.

baseline data

Data gathered prior to the proposed action to characterize pre development site conditions.

bathymetric

The measurement of depths of water in an ocean, lake or sea.

benthic

All underwater bottom terrain from the shore line to the greatest deeps.

berm

An earthen embankment, dike.

big game

Large animals hunted, or potentially hunted, for sport.

bioaccumulation

The process of accumulation and concentration of a chemical (often certain metals) in animal or plant tissues.

biodegradable

Capable of being broken down by the action of living organisms such as micro-organisms.

biomass

The amount (weight or mass) of living material.

biota

All of the living material in a given area; often refers to vegetation.

BLM

Bureau of Land Management

BMP

Best Management Practices

BOD

Biological Oxygen Demand - The quantity of oxygen utilized in the biochemical oxidation of organic matter in a specified time and temperature.

bond

An agreed to sum of money which, under contract, one party pays another party under conditions that when certain obligations or acts are met, the money is then returned; such as mining reclamation.

Borough

An area incorporated for the purpose of self government; a municipal corporation.

borrow area

Rock quarry; earthen construction material source area such as sand and gravel or topsoil taken from specific area for use in reclamation.

breakwater

An offshore structure for breaking the forces of waves to protect a harbor or beach.

bridge crane

A crane in which a beam or bridge carries the hoisting apparatus.

calcite

A mineral, calcium carbonate (CaCO_3). One of the most common minerals; the principal constituent of limestone.

canopy cover

The spreading branchy layer of forest vegetation.

carrying capacity

The ability of a habitat to support all or part of a population's life cycle.

cathode

The negative terminal on an electrolytic cell; the electrode at which electrons enter a device from the external circuit.

CBJ

City and Borough of Juneau

Cd

Cadmium - a tin-white, malleable, ductile, toxic, bivalent metallic element: used in electroplating of iron and steel and in the manufacture of bearing metals.

CEQ

Council on Environmental Quality - A body established by the National Environmental Policy Act (NEPA) to draft regulations for implementing and monitoring NEPA.

CERCLA

Comprehensive Environmental Response Compensation and Liability Act (1980) also known as Superfund. This act provided the authority for money administered by the EPA to identify and clean up hazardous waste sites.

CFR

Code of Federal Regulations

cfs

Cubic feet per second.

char

Closely related to trout, the char genus (Salvelinus) comprises Dolly Varden in the project area.

chlorite

A term used for a group of platyhydrous silicates of aluminum, ferrous iron, and magnesium.

chronically

Continually and repeatedly over a long period of time.

Cl

Chlorine - a toxic, yellow-greenish irritating gas of disagreeable odor belonging to the halogen group of diatomic molecules.

climax plant communities

The stabilized plant community on a particular site. The plant cover does not change so long as the environment remains the same.

closure

Bringing to a point of completion.

CO

Carbon Monoxide - a colorless, odorless very toxic gas that is formed as a product of incomplete combustion of carbon.

COE

The U.S. Army Corps of Engineers - Responsible for reviewing and approving 404 permits.

collector chemical

Chemicals which attach to normally non-floating minerals making them capable of adhering to the air bubbles.

colluvial

Soil material that has moved downhill and has accumulated on lower slopes and at the bottom of a hill consisting of alluvium in part and also containing angular fragments of the original rocks, i.e. cliff and avalanche debris.

concentrate

The remainder of dressed ore that contains the mineral sought; less diluted.

cone of depression

The geometry or shape of an inverted cone on the water table or artesian pressure surface caused by pumping of a well. The cone of depression will disappear over time when well pumping ceases.

conifer

A broad classification of trees, mostly evergreens, that bear cones and have needle-shaped or scalelike leaves; timber commercially identified as softwood.

Corps

The U.S. Army Corps of Engineers (see COE)

cover

Living or non-living material (e.g., vegetation) used by fish and wildlife for protection from predators, to ameliorate conditions of weather, or reproduce.

criteria

Data and information which is used to examine or establish the relative degrees of desirability among alternatives or the degree to which a course of action meets an intended objective.

Cr

Chromium - a hard, brittle, blue-white metallic element used in alloys and electroplating.

Cu

Copper - A red, ductile, malleable native metal found in hydrothermal deposits, cavities of basic igneous rocks and in zones of oxidization of copper veins.

cu ft

Cubic feet

cumulative impacts

Combined impacts of the past, present and reasonable foreseeable future actions. For example, the impacts of a proposed timber sale and the development of a mine together result in cumulative impacts.

cutoff grade

Lowest grade of mineralized rock that qualifies as ore in a given deposit; assay grade below which an ore body cannot be profitably exploited.

cu yd

Cubic yards

cyanidation circuit

The portion of a milling facility where prepared ore is exposed to cyanide, a compound or group of compounds, which dissolves precious metals such as gold.

dBA

A unit for expressing the relative intensity of sound (decibel or dB), weighted along the audible frequencies.

deaeration

The process of removing air or gas, such as oxygen, from something.

DEC

Alaska Department of Environmental conservation

decibel

A unit used in expressing ratios of electric or acoustic power; the relative loudness of sound (dB).

deciduous

Vegetation which annually replaces its leaves following a period of dormancy.

decommissioning

Suspension and/or closure of operations.

DEIS

Draft Environmental Impact Statement, see EIS

deleterious

Hurtful, noxious, destructive.

demography

A statistical study of the characteristics of human populations with reference to size, density, growth, distribution, migration and effect on social and economic conditions.

depletion

Use of water in a manner that makes it no longer available to other users in the same system.

deposit

A natural accumulation, such as precious metals, minerals, coal, gas, oil, dust, etc. that may be pursued for its intrinsic value; gold deposit.

dermatologist

A medical specialist in the treatment of skin conditions.

desorb

To free from a sorbed state; remove by the reverse of adsorption.

development

The work of driving openings to and into a proven ore body to prepare it for mining and transporting the ore.

dewatering

The reduction of aquatic habitats by diversion of stream flow; removal of water from underground mine workings.

diachronic

Consideration of phenomena as they occur, change, or develop over time; such as language, culture.

diamond drilling

Rock drilling that makes use of a diamond tipped drill bit. Often used when recovering a core sample of rock.

dilution

The act of mixing or thinning, and therefore decreasing a certain strength or concentration.

diorite

A plutonic igneous rock composed of sodic plagioclase and hornblende, biotite, or pyroxene. Small amounts of quartz and orthoclase may be present.

dip

The angle at which rock stratum, vein, or any plane (fault) is inclined from a horizontal plane.

direct impacts

"[Impacts] which are caused by the action and occur at the same time and place." (40 CFR 1508.7) Synonymous with direct effects.

discharge

The volume of water flowing past a point per unit time, commonly expressed as cubic feet per second, million gallons per day, gallons per minute, or cubic meters per second.

dispersion

The act of distributing or separating into lower concentration or less dense units.

diversion

Removing water from its natural course or location, or controlling water in its natural course or location, by means of a ditch, canal, flume, reservoir, bypass, pipeline, conduit, well, pump, or other structure or device.

DOI

Department of the Interior; U.S. Federal Government

dore

Metal alloy composed of gold, silver, and other precious metals. Bullion containing unparted metallic gold and silver.

DOT

Department of Transportation

DOTPF

Department of Transportation & Public Facilities

dump

Also called fill, backfill, or storage site; a dump is an area where overburden is piled during the mining process, either temporarily or permanently.

earthquake

Sudden movement of the earth resulting from faulting, volcanism, or other mechanisms within the earth.

effluent discharge

Disposal of water previously used, as in a milling process.

EIS

"Environmental impact statement - Means a detailed written statement as required by section 102(2)(C) of the Act." (40 CFR 1508.11).

electrolytic cell

A container holding a conductive solution in which a flow of electric current is accompanied by the movement of ions.

EMT

Emergency Medical Technician

endangered species

Any species which is in danger of extinction throughout all or a significant portion of its range

environmental assessment

(a) Means a concise public document for which a Federal agency is responsible that serves to:

- (1) Briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact.
- (2) Aid an agency's compliance with the Act when no environmental impact statement is necessary.
- (3) Facilitate preparation of a statement when one is necessary.

(b) Shall include brief discussions of the need for the proposal, of alternatives as required by section 102(2)(E), of the environmental impacts of the proposed action and alternatives, and a listing of agencies and persons consulted. (40 CFR 1508.9).

EPA

Environmental Protection Agency

ephemeral

Lasting only a day or a very short period of time; an arctic plant that grows, flowers, and dies in a few days.

epibiota

Living matter on the surface of plants or living animals, usually parasitically. Especially used to describe fungi.

epicenter

The part of the earth's surface directly above the focus or origin, of an earthquake.

epifauna

Aquatic animals living on the surface of firm substrates.

epizootic

Designating a disease temporarily prevalent among many animals.

erosion

The wearing away of the land surface by running water, wind, ice or other agents.

escapement

The number of adult anadromous fish (e.g., salmon) that escape fishing pressure and enter their natal streams to spawn.

estuarine

Of, relating to, or formed in a place where an ocean tide meets the current of a stream

exacerbate

To cause some unfavorable condition to worsen; harsh, bitter, unpleasant, sour.

exploration

The search for economic deposits of minerals, ore, gas, oil or coal through the practices of geology, geochemistry, geophysics, drilling, shaft sinking and/or mapping.

°F

Degrees Fahrenheit

FAA

Federal Aviation Administration

fault

A displacement of rock along a shear surface.

feasibility study

As applied to mining, the feasibility study follows discovery of the mineral and is done by the mining company. Its purpose is to analyze the rate of monetary return that can be expected from the mine at a certain rate of production. Based on this study, the decision to develop the ore body may be made.

fecundity

The quality, ability, power of producing off spring, especially in large numbers.

FCC

Federal Communications Commission

filter cake

Resulting solids having a low moisture content following the extraction of water by filtering or a mechanical belt press.

fines

Fine particulate matter; specifically particles less than 0.4 mm in diameter.

fishery

Any premises upon which breeding, hatching, or fish-rearing facilities are situated and required to have a license by the State fish and game code, including ponds for commercial use.

float plane

A seaplane supported on the water by one or more floats.

flocculation

To aggregate into lumps, the electrostatic bonding of charged particles. Physical-chemical forms of particles and chemicals may be stable in freshwater and destabilize on passing into higher ionic strength of the seawater medium.

flotation circuit

The portion of the milling process where the flotation process occurs.

flue gas

The gaseous emissions from a chimney or stack.

fluvial

Of or relating to a stream or river.

footwall

The lower, underlying wall of a vein, coal deposit or ore seam in a mine, or of an inclined fault; as opposed to hanging wall. A footwall also refers to the entire mass of rock below an inclined fault. It is called the floor in bedded deposits.

foreground

Generally the area that lies within one-fourth mile of the view; details such as stumps and rocks being readily visible.

Forest Plan

Each of the National Forests administered by the U.S.D.A. Forest Service is operated under a five-year "Land and Resource Management Plan" as required by the National Forest Management Act of 1976. The 1976 Act was an amendment to the Multiple use Sustained Yield Act of 1960 and the Forest and Rangeland Renewable Resources Planning Act of 1974. Forest Plans are prepared under the authority of these acts.

404 Permit

Section 404 of the Clean Water Act specifies that anyone wishing to place dredged or fill materials into the waters of the United States and adjacent jurisdictional wetlands shall apply to the U.S. Army Corps of Engineers for approval. A permit issued by the Corps of Engineers for these activities is known as a 404 permit.

free cyanide

Cyanide molecules that are unattached to any other atoms; chemically uncombined.

french drain

A water passage made by filling a trench with loose stones and covering with earth.

frother chemical

Chemical that produces a froth of tough bubbles to float certain mineral particles.

froth flotation

An ore concentration process that separates ground ore from waste in a mixture of ore, water and chemicals. When air is forced through the ore/water mixture, the chemicals cause certain minerals to adhere to the air bubbles and float to the top in a froth, thus effecting a separation.

fry

A recently hatched fish.

FSD

Final Scoping Document - This document is prepared by the Forest to guide the preparation of the EIS. It is the basic reference to assure that the EIS addresses issues, concerns and opportunities identified by the public and regulatory agencies.

fugitive dust

dust particles resuspended randomly from road travel, excavation and rock loading operations.

furrow

A trench or ditch in the earth which may act as a watercourse for drainage or irrigation.

FWS

Fish and Wildlife Service - United States Department of Interior

geomorphic

Pertaining to the form of the surface of the earth.

geotechnical

A branch of engineering that is essentially concerned with the engineering design aspects of slope stability, settlement, earth pressures, bearing capacity, seepage control, and erosion.

gillnet

A flat net suspended vertically in the water with meshes that allow the head of a fish to pass but entangle its gill covers upon withdrawal.

glaciolacustrine

Of, relating to, or coming from lakes deriving much or all of their water from the melting of a glacier.

glaciofluvial

Of, relating to, or coming from streams deriving much or all of their water from the melting of a glacier.

gpd

Gallons per day

gpm

Gallons per minute

grade

A rate of ascent or descent stated as so many feet per mile or as ft/ft (%); the level or elevation of a particular land or water surface; the content of precious metals per volume of rock (oz/ton).

grizzly

Heavy steel grate used to size, sort, and grade materials into required categories.

grout

A thin mortar fluid applied by gravity flow or under pressure to seal off undesirable fluids.

habitat

The natural environment of a plant or animal, including all biotic, climatic, and soil conditions, or other environmental influences affecting living conditions.

hanging wall

The upper or overhanging wall of a vein, coal deposit, ore seam in amine, of an inclined fault or other geologic structure; as opposed to footwall. It is called the roof in bedded deposits.

haulouts

Areas on land where sea lions rest.

hazardous waste

A waste is considered hazardous by the EPA if it exhibits one or more of these characteristics; ignitability, corrosivity, reactivity, toxicity. These are listed in 40 CFR 261.3 and 40 CFR 171.8.

heap leach

A process for removing metals from ores that involves trickling leach solutions over large quantities of ore, dissolution of the metal from the ore with subsequent fluid recovery and treatment to recover metal values.

heavy metals

A group of elements, usually acquired by organisms in trace amounts, that are often toxic in higher concentrations; includes copper, lead, mercury, molybdenum, nickel, cobalt, chromium, iron, silver, etc.

herbaceous

Vegetation that lacks woody tissue or is valued for medicine or savory qualities.

heterogeneous

Not uniform in structure or composition.

Hg

Mercury - a heavy, silver-white poisonous metallic element; the only metal liquid at ordinary temperatures.

HL&P

Haines Light & Power Company

Holocene

The most recent period of geologic time.

hydraulic conductivity

A measure of the ability of rock or soil to permit the flow of groundwater under a pressure gradient; permeability.

hydrocyclones

A pressure operated particle sizing device that separates according to mass with forces greater than normal gravity through rotation.

hydrologic system

All physical factors, such as precipitation, stream flow, snowmelt, groundwater, etc., that effect the hydrology of a specific area.

hydropyhtic

A perennial aquatic plant requiring an abundance of water for growth.

ICO

Issues, Concerns and Opportunities - Usually used in describing important criteria for evaluating a project under NEPA.

IDT

Interdisciplinary Team - As proposed by recent Forest Service regulations, the interdisciplinary team will be comprised of Forest Service personnel who collectively represent two or more areas of specialized technical knowledge about natural resources management applicable to the area being planned. The team will consider problems collectively, rather than separate concerns along disciplinary lines. This interaction will insure systematic, integrated consideration of physical, biological, economic, and other sciences.

impermeable

Property of a substance that inhibits passage of fluids through its mass

impoundment

The accumulation of any form of water in a reservoir or other storage area.

incized

A narrow, steep-walled valley caused by erosion.

increment

The amount of change from an existing concentration or amount; such as air pollutant concentrations.

indigenous

Originating, developing, or produced naturally in a particular land, region, or environment; native.

indirect impacts

[Impacts] which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. (40 CFR 1508.8) Synonymous with indirect effects.

inert

A substance that is chemically unreactive; not effecting any substance it comes in contact with.

infauna

Aquatic animals living in and on soft bottom substrates.

infiltration

The movement of water or some other fluid into the soil through pores or other openings.

infrastructure

The underlying foundation or basic framework; substructure.

in situ

A Latin term meaning "in place", in the natural or original position.

interstitial

Occupying the spaces between sediment particles.

intertidal

The zone of sea bottom between the low and high tide lines.

isohaline

Having the same concentration of dissolved salts, a line or surface drawn on a map or chart to indicate points of equal salinity in the ocean.

isothermal

Having equal temperatures.

Jurassic period

The middle period of three geologic periods composing Mesozoic era. Approximate age is 136 to 195 million years ago.

jurisdictionally wetland

A wetland area delineated and identified by specific technical criteria, field indicators and other information for purposes of public agency jurisdiction. The public agencies which administer jurisdictional wetlands are the Fish and Wildlife Service, Department of the Army, Environmental Protection Agency and the Soil Conservation Service.

KV

Kilo Volts - one thousand volts.

land management plan

See forest plan.

leaching

The process of applying a dilute sodium cyanide solution to gold bearing ore, which trickles (percolates) through the ore. The gold complexes or binds to the solution, which is then called a "pregnant" solution. The pregnant solution is collected for processing to recover the gold.

level

Mines are customarily worked through horizontal passages or drifts called levels. These are commonly spaced at regular intervals in depth and are either numbered from the surface in regular order or designated by their actual elevation below ground level.

LHD

Load-Haul-Dump - a vehicle similar to a front-end loader which is used underground and in low clearance operations.

lineament

A topographic line that is structurally controlled. Lineaments are studied especially on aerial photographs.

long-term impacts

Impacts that result in a permanent changes to the environment. An example is a topographic change resulting from tailings disposal in a creek drainage.

logarithmic scale

A scale on which actual distances are proportional to the exponent of the scale number rather than the numbers themselves.

LPG

Liquified Petroleum Gas

LUD II

Land Use Designation II - A designation by the Forest Service to manage these areas "in a roadless state to retain their wildland character, but this would permit wildlife and fish habitat improvement and primitive recreational facility development." (Tongass Land Management Plan 1986).

magazine

A place where goods or supplies are stored; usually explosives, ammunition, etc.

marine outfall

The mouth or outlet of a river, stream or pipeline where it enters the sea.

maritime

Relating to navigation or commerce on the sea; bordering on the sea.

mass wasting

The process involving movement of rock and soil which is controlled directly by gravity, including creep, landslides, and mudflows.

metallurgy

A science and technology that deals with the extraction of metals from their ores, refining, processing, etc.

mg/l

Milligrams per liter

microclimate

The local climate of a given area or habitat characterized by uniformity over the site and different from the enveloping macroclimate.

migratory

Moving from place to place, daily or seasonally.

milling

The process of separating the valuable constituent (gold) from the undesired or non-economic constituents of the ore material (called tailings after milling).

mineral benefaction

The process of treating ore so that the resulting product is richer or more concentrated with minerals. It is primarily a milling and concentrating process.

minimum streamflow requirement

A set amount of water to be maintained in a water course for the purpose of reasonably maintaining the environment.

mining plan

See operating plan.

mitigation measure

There are several meanings of mitigate: Avoid the impact by not taking action. Minimize the impact by limiting the degree of magnitude of the action and its implementation. Rectify the impact by repairing, rehabilitating, or restoring the affected environment. Reduce or eliminate the impact over time by preservation and maintenance operations during the life of the action. Compensate for the impact by replacing or providing substitute resources, or by enhancing the value of an adjacent existing environment.

modified mercalli scale

A descriptive means of rating earthquake severity based on damage reported.

monitoring

A watching, observing or checking, in this instance, a continuing testing of specific environmental parameters and of project waste streams for purposes of comparing with permit stipulations, pollution control regulations, mitigation plan goals, etc.

mooring dolphins

A buoy, spar or dock post with a ring for attachment to ships cables.

MOU

Memorandum of Understanding

MSHA

Mines Safety and Health Administration - Federal agency under the Department of Labor which regulates worker health and safety in mining operations.

multiple use

The management concepts under which National Forest lands are managed. It involves the management of resources in combinations that will best serve the public.

muskegs

A marsh or bog.

MW

Mega watt - A million watts.

NAAQS

National Ambient Air Quality Standards

National Register of Historic Places

A list, maintained by the National Park Service, of areas which have been designated as being of historical significance.

naturopath

A practitioner of natural treatments for disease.

navigable water

"Navigable waters of the United States are those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce." (33 CFR 329.4).

NEPA

The National Environmental Policy Act of 1969 - National charter for protection of the environment. It establishes policy, sets goals and provides means for carrying out the policy. 40 CFR 1500-1508 are the regulations for implementing the act.

NEPA Process

All measures necessary to comply with the requirements of section 2 and Title I of NEPA.

New Source Performance Standards

Standards set by EPA defining the allowable pollutant discharge (air and water) and applicable pollution control for new facilities; by industrial category.

Ni

Nickel - a silver-white hard malleable ductile ferromagnetic metallic element, polishable, resistant to corrosion.

NMFS

National Marine Fisheries Service

NOAA

National Oceanographic and Atmospheric Administration

NO₂

Nitrogen dioxide

nonpoint air pollution

Pollution caused by sources that are non-stationary. In mining, nonpoint air pollution results from such activities as blasting and hauling minerals over roads, as well as dust from tipples, mineral stockpiles, tailings, and waste dumps prior to mulching and/or revegetation.

NO_x

Nitrogen Oxides

NPDES

National Pollutant Discharge Elimination System - A program authorized by sections 318, 402 and 405 of the Clean Water Act, and implemented by regulations 40 CFR 122. NPDES program requires permits for the discharge of pollutants from any point source into waters of the United States.

NPS

National Park Service

NSPS

See New Source Performance Standards

NWS

National Weather Service

odd-even year run cycle

Because pink salmon live and spawn only after 2 years, runs in even and odd years may be quite different in character and in size.

omnivorous

Eating any sort of food, especially both animal and vegetable food.

100-year flood

A flood that occurs on the average once every 100 years.

operating plan

Submitted by the mining operator, the operating plan outlines the steps the mining company will take to mine and rehabilitate the site. The operating plan is submitted prior to starting mining operations. Synonymous with the term mining plan.

ore Any deposit of rock from which a valuable mineral can be economically extracted.	pediatrician A specialist in the care and medical treatment of children.
Organic Act The 1897 Act contains the basic authority for management of National Forests.	performance bond See reclamation guarantee.
organic matter Matter composed of once-living organism (carbon compounds).	periphyton Organisms, including algae, which live attached to underwater surfaces.
organism A living individual of any plant or animal species.	petroglyphs A carving or inscription on a rock.
orthopedic One employed or relating to the correction or prevention of deformities, especially in the skeletal structure.	pH Symbol for the negative common logarithm of the hydrogen ion concentration (acidity) of a solution. The pH scale runs from 0 to 14, with a Ph of 7 considered neutral. A pH number below 7 indicates acidity and a pH value above 7 indicates alkalinity or a base.
outmigration The seaward migration of anadromous fishes.	phyllite A foliated metamorphic rock that is intermediate in composition and fabric between slate and schist.
overburden Useless material which overlies a deposit of useful material.	physiographic province A region having a particular pattern of relief features or land forms that differs significantly from other adjacent regions.
oxide A compound of oxygen with one or more metallic elements or organic radical.	physiography A description of the features and phenomena of nature.
ozone An allotropic, triatomic form of oxygen found largely in the stratosphere; a product of reaction between ultraviolet light and oxygen.	piezometer A device for measuring moderate pressures of liquids.
Patent A document conveying title to land from the U.S. Government to private ownership.	piezometric head The level to which a liquid will rise in a piezometer, representing the static pressure of a water body.
patented claims Private land which has been secured from the Government by compliance with the laws relating to such lands.	piezometric surface Any imaginary surface coinciding with the hydraulic pressure level of the water in a confined aquifer, or the surface representing the static head of ground water and defined by the level to which water will rise in a well. A water table is a particular piezometric surface.
Pb Lead - a soft, heavy, malleable, ductile, plastic but inelastic metallic element that is bluish-white color.	

Plan of Operations

See operating plan.

PMF

Probable Maximum Flood - A theoretical flood event used for engineering design purposes.

point source

Stationary sources of potential pollutants. In terms of mining, some examples of point sources are crushing and screening equipment, conveyor and pond outlet pipes.

pollution

Human-caused or natural alteration of the physical, biological, and radiological integrity of water, air, or other aspects of the environment producing undesired effects.

portal

The entrance to a tunnel or underground mine.

potable water

Suitable, safe, or prepared for drinking.

potentiometric surface

Surface to which water in an aquifer would rise by hydrostatic pressure.

precious metal

Any of the less common and highly valuable metals; gold, silver, platinum.

precipitation

The process of removing solid or liquid particles from a gas or smoke; rain, mist, snow, etc.; the process of forming a precipitate from a solution (flocculation).

pregnant solution

The resulting solution from the leaching process which contains dissolved metal values.

prescriptive mitigation

The rules or directive in-place giving precise instructions on the abatement or alleviation of certain issues.

prehistoric

Relating to the times just preceding the period of recorded history.

priority pollutant

Toxic aqueous pollutants specified as of particular concern in the Clean Water Act; EPA sets limits for discharge of these pollutants.

pristine

Pertaining to pure, original, uncontaminated conditions.

probable maximum flood

See PMF.

prospect

A property in which the mineral value has not been proven by exploration.

PSD

Prevention of Significant Deterioration - Under provisions of the Federal Clean Air Act, a proposed new source of air pollution may be required to apply for PSD permit if certain emission limits are expected to be exceeded.

public scoping

Giving the public the opportunity for free, unhampered, speaking or writing concerning the intentions, activity, or influence of a project on the community, environment, personal, or anything relative.

pyrite

A common mineral consisting of iron disulfide (FeS_2) with a pale brass-yellow color and brilliant metallic luster. It is burned to make sulfur dioxide and sulfuric acid.

pyritic

Relating to or resembling pyrite, a common mineral; iron disulfide.

quartz

A mineral, silicon dioxide (SiO_2) that, next to feldspar, is the most common mineral, and occurs in usually colorless, transparent crystals, but may be yellow, brown, purple, pink, or green.

raptor

Bird of prey, including eagles, hawks and owls.

RCRA

Resource Conservation and Recovery Act

reagent

A chemical substance used in the treatment of ores.

recharge

Absorption and addition of water to the zone of saturation.

reclamation

Returning disturbed land to a form and productivity that will be ecologically balanced and in conformity with a predetermined land-management plan.

reclamation guarantee

A binding commitment payable to a governmental agency in the event that decommissioning and reclamation of an operation is not completed according to an approved plan. See bond.

Record of Decision

A document which discloses the decision on a major federal action and the reasons why the decision was made; it is signed by the official responsible for implementing the identified action. The environmental consequences disclosed in an Environmental Impact Statement are considered by the responsible official in reaching a decision.

reduced sulfur compounds

Sulphur compounds changed to a non-reactive state; deoxidized.

resident

A species, which is found in a particular habitat for a particular time period (i.e. winter resident, summer resident, year-round) as opposed to those found only when passing through on migration.

richter scale

A numerical (logarithmic) measure of earthquake intensity.

rills

A channel or groove made by a small stream.

riparian

A type of ecological community that occurs adjacent to streams and rivers. It is characterized by certain types of vegetation, soils, hydrology and fauna and requires free or unbound water or conditions more moist than that normally found in the area.

riprap

A layer of large, broken rock placed together irregularly to prevent erosion of embankments, causeways, or other surfaces.

ROD

Record of Decision

rookeries

Breeding and raising ground for sea mammals and birds.

ROS

Recreational Opportunity Spectrum - Used in describing potential recreational uses of an area.

runoff

Precipitation that is not retained on the site where it falls, not absorbed by the soil; natural drainage away from an area.

safety factor

A safety factor is a ratio of resisting forces to driving forces. By determining a structure's safety factor, a numerical index of stability is obtained.

SAG mill

Semi-Autogenous Grinding Mill - A mill which uses the ore itself as a grinding medium and supplements with steel balls as required to obtain the proper size.

salmonids

Fish species (salmon, trout and char) that belong to the same family; salmonidae.

satellite community

A small community physically separate from the main community, yet not self-sufficient.

scrubber

Equipment used to remove pollutants (such as sulfur dioxides or particulate matter) from stack gas emissions.

Se

Selenium - A non-metallic, toxic element related to sulphur and tellurium; a by-product of the electrolytic refining of copper.

Section 10 Permit

Section 10 of the Rivers and Harbors Act of 1899 requires a permit for any structure or work that may obstruct traditionally navigable waters. This permit is issued by U.S. Army Corps of Engineers.

sedentary organisms

Not migratory; staying in one place; stationary.

sediment

Material suspended in liquid or air; also, the same material once it has been deposited.

sediment basin

A pond, depression, or other device used to trap and hold sediment.

sediment loading

The mass of solid erosion products deposited by or carried in water or air.

sediment trap

A facility (e.g., an excavated basin or pond) or quiet water where suspended particulates can settle to the bottom, reducing sediment transport downstream.

seiche

A periodic oscillation of water in a lake or harbor whose period is determined by the resonant characteristics of the containing basin as controlled by its physical dimensions.

seismic refraction

Angular redirection of seismic waves upon passing into a medium with a different velocity; such as earthquake shock waves traveling in various crusted material.

seismic risk zone

Hazard zones identified in the uniform Building Code which, based on earthquake potential, is used to determine building construction requirements.

seismicity

The likelihood of an area being subject to natural earthquakes; the relative frequency, magnitude, and kind of natural earthquakes.

sensitive species

A plant or animal listed by a State or Federal agency as being of environmental concern; includes but is not limited to threatened and endangered species.

sensitivity level

A particular degree of measure of viewer interest in and concern for the scenic quality of the landscape.

series

Composed of soils having similar arrangements of horizons and having, within certain limits, similar physical and chemical properties.

settling ponds

Structures constructed by excavation and/or by building an embankment whose purpose is to retain water and allow for settlement of fines (TSS) and reduction in turbidity.

SHPO

State Historic preservation office

short-term impacts

Impacts occurring during project construction and operation, and ceasing upon project closure and reclamation.

significant issues

Of all the issues and concerns raised during the scoping process for an environmental impact statement, certain of those issues are determined to be "significant" by the lead public agency. Determining which issues are significant, and thus meriting detailed study in the EIS, is the final step of the scoping process and varies with each project and each location.

siltation

The deposition or accumulation of silt or unconsolidated very fine grained soil particles.

SIP

State Implementation Plan

slag

The non-gold material that separates from the gold values during melting. It is separated from the gold when the cathode mixture in the furnace is poured into separate, special pots and allowed to cool and solidify.

slumping

Sliding of a mass of unconsolidated sediment down-slope. The sediment moves as a unit mass and often becomes a turbidity flow. Slumping may be triggered by slope instabilities or by earth movements.

slurry

A watery mixture or suspension of insoluble matter such as mud or lime.

smolt

A young salmon as it enters saltwater.

SO_x

Sulfur oxides, including sulfur dioxide (SO₂).

SO₂

Sulfur dioxide

solid waste

Garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities.

spawn

To produce and/or deposit eggs or sperm or the eggs or sperm product.

SPCC

Spill Prevention Control and Countermeasure Plan - A plan which the EPA recommends having on file within six months of project inception. It is a contingency plan for avoidance of, containment of and response to hazardous materials spills or leaks.

specific gravity

The ratio of the density of a substance to that of pure water, using the same volume of each substance.

SPM

Semi-primitive Motorized - A descriptive term for recreational use of an area.

SPNM

Semi-primitive Non motorized - A descriptive term for recreational use of an area.

stereoscopic

The process of viewing an object from two locations to produce a three dimensional image, especially when a stereoscope is used to view aerial photograph pairs.

stockpiling

Storage of soils and/or rock material.

stockwork

A solid mass of rock so interpenetrated by small veins of ore that the whole mass must be mined together.

stopping

A process by which ore is excavated in an underground mine; removal of ore from an underground excavation (stope).

strata

A tabular mass or thin sheet of earth of one kind formed by natural causes usually in a series of layers of varying make-up; sedimentary units.

streamflow

The discharge (flow of water) in a natural channel.

stream gradient

The rate of fall or loss of elevation over the physical length of a segment or total stream usually expressed in feet per foot (%).

strike

The horizontal course or bearing of an inclined bed, stratum, or vein; the direction of a horizontal line in the plane of an inclined bed, stratum, or vein.

subalpine

Relating to high upland slope immediately below the timberline.

subsidence

A local lowering of surface land caused by the collapse of rock and soil into an underground void; it can result in stability failures such as landslides and mine roof cave-ins.

subsistence use

Section 803 of the Alaska National Interest Lands Conservation Act defines subsistence use as: "The customary and traditional uses by rural Alaska residents of wild, renewable resources for direct personal or family consumption as food, shelter, fuel, clothing, tools, or transportation; for the making and selling of handicraft articles out of the non-eatable by-products of fish and wildlife resources taken for personal or family consumption; for barter, or sharing for personal or family consumption; and for customary trade."

substrate

An underlayer of earth or rock.

succession

Changes in the plant communities composing an ecosystem as the ecosystem evolves from one type to another, e.g. wetlands becoming grassy meadows.

sulfide prospect

Referring to an area of geologic interest considered for the potential recovery of metals that contain compounds of sulfur.

sump

In the case of an underground mine, an excavation made underground to collect water, from which water is pumped to the surface or to another sump nearer the surface.

surficial

Characteristic of, relating to, formed on, situated at or occurring on the earth's surface; especially, consisting of unconsolidated residual, alluvial, or glacial deposits lying on the bedrock.

synchronous

Recurring or operating at exactly the same periods.

synthetic liner

A protective layer made of man-made materials installed along the bottom, sides and/or top of a disposal area to reduce the migration of fluids into or out of the disposal area.

tailings

The non-economic constituents of the ground ore material that remains after the valuable minerals have been removed from raw materials by milling.

talus

Heaps of coarse debris at the foot of cliffs and steep slopes resulting from gravity transport and weathering processes.

tank cyanidation

The process of extracting gold from ore in enclosed containers such as concrete and/or steel tanks.

taxonomy

The science of the classification and arrangement, according to relationships, of living organisms.

TCU

Transportation Communications & Utilities

TDS

Total Dissolved Solids - As it applies to sediments in streams.

telluride

A binary compound of tellurium with a more electropositive element.

Te

Tellurium - A semimetallic element that chemically resembles selenium and sulphur.

10-year recurrence interval flood

A flood that occurs on the average once every ten years.

10-year, 24-hour event

The precipitation that is predicted to occur during a 24-hour period with a 10-year recurrence interval.

terrestrial

Of or relating to the earth, soil, land; an inhabitant of the earth or land.

third-party contractor

An independent firm contracted by a government agency to perform work related to a proposed action of another organization; due to the financial and contractual arrangements governing such relationships, the third-party contractor has no financial or other interest in the decision to be reached on the project.

threatened species

A wildlife species officially designated by the Fish and Wildlife Service as having its existence threatened.

tideland

Land that is overflowed by the tide but exposed during times of low water.

till

Non-sorted, non-stratified sediment carried or deposited by a glacier.

timber slash

Non economic timber refuse that is cut but remains in the area after timber harvest.

Tlingit

A group of indian peoples of the islands and coast of Southern Alaska including chiefly the Auk, Chilkat, Sitka, Stikine, Tongass, and Yakutat.

topography

A configuration of a surface including its relief.

toxicity tests

Refers to predescribed laboratory analysis generally used to determine the degree of danger posed by a substance to animal or plant life.

tpd

Tons per day

tpy

Tons per year

transects

A sample area in the form of a long narrow continuous strip that is used for the tabulation of data.

transmissivity (coefficient of)

A measure of the ability of an aquifer to transmit water.

TSP

Total Suspended Particulates

TSS

Total Suspended Sediment, as it applies to sediments in streams.

tsunamis

A great sea wave produced by an earthquake or volcanic eruption.

turbidity

Reduced water clarity resulting from the present of suspended matter.

unavoidable effects

Many effects which could occur from the Project can be eliminated or minimized by management requirements and constraints and mitigation measures. Effects that cannot be eliminated are identified as unavoidable.

unpatented claims

Mineral resources for which a person has made a claim on open, unappropriated federal lands. See patented claim.

USDA

United States Department of Agriculture

USFWS

United States Fish and Wildlife Service

USGS

United States Geological Survey

U-shaped drainage

A surface drainage area which, in cross-section, is U-shaped; generally caused by glaciation.

underflow

Movement of water through subsurface material.

understory

A foliage layer lying beneath and shaded by the main canopy of a forest.

upwelling

To move or flow upward.

Variety Classes

A particular level of visual variety or diversity of landscape character as identified in the Forest Service Visual Management System.

vat leach

The process of removing, in solution, precious metals from oxide ores through leaching in a large tank, barrel or other vessel.

Visual Management Objectives

Objectives identified by the Forest Service for management of viewsheds.

vein

A mineralized zone having a more or less regular development in length, width, and depth to give it a tabular or sheet-like form and commonly inclined at a considerable angle to the horizontal. A mineral deposit of this form.

visual resources

The Forest Service manages viewsheds as a resource, establishing specific management objectives for different areas of Forest Service land.

VQO

Visual Quality Objectives. Used by the Forest Service in classifying visual resources of an area.

WAD

Weak Acid Dissociable - Refers to a testing procedure to measure the amount of cyanide that can be chemically liberated using a prescribed mixture of dilute acids.

waste rock

Also known as underground development rock, waste rock is the non-ore rock that is extracted to gain access into the ore zone. It contains no gold or gold below the economic cutoff level, and must be removed to gain access to the ore zone.

water balance

A measure of continuity of water flow in a fixed or open system.

watershed

The entire land area that contributes water to a particular drainage system or stream.

Waters of the United States

(a)(1) all waters which are currently used, or were used in the past or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; (2) all interstate waters including interstate wetlands; (3) all other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect the interstate or foreign commerce including any such waters: (i) which are or could be used by interstate or foreign travels for recreational or other purposes; or (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (iii) which are used or could be used for industrial purposes by industries in interstate commerce; (4) all impoundments of waters otherwise defined as waters of the United States under this definition; (5) tributaries of waters identified in paragraphs (1)(1)-(4) of this section [definition]; (6) the territorial sea; (7) wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section [definition]. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA

[Clean Water Act] (other than cooling ponds as defined in 40 CFR 123.11 (m)) which also meets the criteria of this definition are not waters of the United States.

weathering

The process whereby larger particles of soils and rock are reduced to finer particles by wind, water, temperature changes, and plant and bacteria action.

weir

A device (as a notch in a dam) for determining the quantity of water flowing over it from measurements of the depth of water over the crest or sill, and known dimensions of the device.

wetlands

Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances, do support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, etc.

wilderness

Land designated by Congress as a component of the National Wilderness Preservation System.

wind rose

A diagram showing the relative frequency of winds blowing from different directions.

worst case impacts

An imagined scenario of the impacts resulting from extreme conditions or combination of situations; for example, extreme conditions causing failure of impoundment structures.

xanthates

A class of chemicals known as "collector" chemicals, which attach to normally non-floating minerals making them capable of adhering to the froth in a floatation circuit.

Zn

Zinc - A bluish-white crystalline metallic element commonly associated with lead in mineral deposits.



APPENDIX D
NPDES Permit
(DRAFT)

NOTICE

Following is NPDES Draft Permit No. AK-005057-1. This Draft Permit was issued for public review and comment by the Environmental Protection Agency Region 10 on June 3, 1991. The public comment period closed September 3, 1991. Changes that result from public comments will be incorporated into the permit. The permit will not be issued until after the FEIS is signed.

EPA is not soliciting comments on the Draft NPDES Permit at this time. It is included in the Kensington project FEIS for reference only.

Permit No.: AK-005057-1
Application No.: AK-005057-1

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue
Seattle, Washington 98101

AUTHORIZATION TO DISCHARGE UNDER THE

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM

In compliance with the provisions of the Clean Water Act,
33 U.S.C. §1251 et seq., as amended by the Water Quality Act of 1987,
P.L. 100-4, the "Act",

KENSINGTON VENTURE

is authorized to discharge from the Kensington Venture mine facility
located north of Juneau, Alaska,
to receiving waters named Lynn Canal,

in accordance with the discharge point, effluent limitations, monitoring
requirements and other conditions set forth herein.

This permit shall become effective

This permit and the authorization to discharge shall expire at
midnight,

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Signed this day of

DRAFT

Director, Water Division, Region 10
U.S. Environmental Protection Agency

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Figure 1 = Environmental Monitoring Sample Locations
Attachment 1 = 40 CFR 125.104, Best Management Practices Plan Requirements

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I. EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS

A. Effluent Limitations and Monitoring Requirements

During the period beginning on the effective date of this permit and lasting until the expiration date, the permittee is authorized to discharge from outfall 001 to Lynn Canal subject to B. the following conditions:

1. The permittee shall notify EPA and ADEC when discharge will commence through outfall 001. This notice shall be submitted in writing at least one week before discharge begins.
2. There shall be no discharge of floating solids, visible foam, or oily wastes which produce a sheen on the surface of the receiving water.
3. The following effluent limits and monitoring requirements shall apply:

Effluent Parameters	Effluent Limitations		Monitoring Requirements	
	Maximum Daily	Average Monthly	Frequency	Sample Type
Flow, mgd	--	--	Daily	measurement
pH	6.0 to 8.5	standard units	Daily	Grab
Chlorine, ug/l	200	82	Daily	Grab
Total Suspended Solids, mg/l	30.0	20.0	Weekly	Grab
Turbidity, NTU	--	--	Weekly	Grab
Ammonia, ug/l	--	--	Weekly	Grab
Arsenic, ug/l*	5602.0	3410.0	Weekly	Grab
Cadmium, ug/l*	100.0	50.0	Weekly	Grab
Chromium, ug/l*	8213.0	5000.0	Weekly	Grab
Copper, ug/l*	150.0	91.0	Weekly	Grab
Cyanide, ug/l**	100.0	61.0	Weekly	Grab
WAD, ug/l***	--	--	Weekly	Grab
Iron, ug/l*	600.0	300.0	Weekly	Grab
Lead, ug/l*	2.0	1.0	Weekly	Grab
Mercury, ug/l*	1074.0	654.0	Weekly	Grab
Nickel, ug/l*	11663.0	7100.0	Weekly	Grab
Selenium, ug/l*	230.0	140.0	Weekly	Grab
Silver, ug/l*	1500.0	750.0	Weekly	Grab
Zinc, ug/l*				

* These parameters shall be measured as total recoverable.

** This parameter shall be measured as total.

*** WAD = Weak Acid Dissociable Cyanide

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Effluent Biomonitoring Program Requirements

An effluent biomonitoring testing program shall be initiated within 30 days after mining and milling operations begin. Tests shall be conducted on effluent from outfall 001.

1. Chronic Tests:

The permittee is required to perform chronic toxicity tests of the effluent in accordance with sections a. to d. and Part I.B.3. below.

- a. The permittee shall conduct toxicity testing of the effluent with the following organisms:

-an echinoderm (either the sea urchin, Strongylocentrotus purpuratus, S. droebachiensis, or S. franciscanus, or the sand dollar, Dendraster excentricus).

-a mollusc (either the mussel, Mytilus edulis, or the Pacific oyster, Crassostrea gigas);

- b. The toxicity testing on each organism shall include a series of six test solutions, ranging from zero percent effluent (control) to the highest percent effluent that will not cause adverse salinity effects. The permittee shall determine the no observable effect concentration (NOEC) of the effluent in the control water. The NOEC is that concentration of effluent for which survival, reproduction, or growth of the test organisms is not significantly different (at the 95% confidence level) from that of the control organisms (see Technical Support Document for Water Quality-based Toxics Control, Office of Water, U.S. EPA, March, 1991, EPA/505/2-90-001).

- c. All test organisms and procedures for the mollusc larvae tests shall be in accordance with:

Standard Practice for Conducting Static Acute Toxicity Tests with the Larvae of Four Species of Bivalve Molluscs, Designation: E 724-80. American Society for Testing and Materials (ASTM). 1980.

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All test organisms and procedures for the echinoderm tests shall be in accordance with either:

Improved Methodology for a Sea Urchin Spermcell Bioassay for Marine Waters, Dinnel, P.A., J.M. Link, and Q.J. Stober. 1987. Arch. Environ. Contam. Toxicol. 16:23-32., or

Methodology and Validation of a Sperm Cell Toxicity Test for Testing Toxic Substances in Marine Waters, Dinnel et al., FRI-UW-8306, November 1983.

- d. The report of test results shall include all relevant information outlined in Section 10, Report Preparation, of Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, EPA/600-4-87/028.

2. Acute Survival Tests:

The permittee is required to perform acute survival toxicity tests of the effluent in accordance with sections a. and b., and Part I.B.3. below.

- a. The permittee shall perform static renewal or flowthrough bioassays with coonstripe shrimp larvae (Pandalus hypsinotus) and pink salmon smolt (Oncorhynchus gorbuscha), using protocols provided by ADEC. Each test shall determine the 96-hour LC₅₀.

This bioassay testing requirement is subject to availability of the life stages specified and shall determine the 96-hour LC₅₀ of whole effluent utilizing the procedures and protocol described in Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms (EPA/600/4-85/013). With the exceptions that the tests will be conducted over 96-hours, they will utilize the species specified in this permit and will utilize either flow-through testing or static-with-replacement testing of effluent/seawater mixtures.

- b. The report of test results shall include all relevant information outlined in Section 13, Report Preparation and Data Utilization, of Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms (Third Edition), EPA/600-4-85/013.

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3. Provisions Applicable to Both Chronic and Acute Tests:

- a. Testing shall be conducted on grab samples of effluent from outfall 001. Each sample collected shall be large enough to provide effluent to conduct chronic and acute survival toxicity tests, plus chemical tests required in Part I.A.3.

- b. Testing is required four times per year (once every three months). If any of the organisms selected above are not available commercially during the testing period, the permittee may substitute other appropriate organisms for testing. Substitute organisms must be approved by EPA and ADEC prior to use. To use substitute organisms for the biomonitoring tests, the permittee must submit a report for approval to EPA and ADEC, which identifies the proposed substitute organisms and the justification for substitution. This report must be submitted to EPA and ADEC at least two months prior to the commencement of wastewater discharge.

- c. All quality assurance criteria and statistical analysis used for chronic tests shall be in accordance with Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Marine and Estuarine Organisms, EPA-600/4-87-028, and the individual test protocols. All quality assurance criteria and statistical analysis used for acute survival tests shall be in accordance with Methods for Measuring the Acute Toxicity of Effluents to Freshwater and Marine Organisms (Third Edition), EPA-600/4-85-013. Any tests which fail the criteria for control mortality as specified in the respective protocols shall be repeated on a freshly collected sample.

The control water shall be high quality natural seawater. No exception will be made for artificial sea salts or concentrated brine unless the permittee submits data to EPA and ADEC which demonstrate that the lab has reliably conducted the specified test with one of these media.

- d. The results of the bioassay tests shall be submitted to EPA and ADEC within 30 days after completion of each test. Along with the results, the permittee shall include the dates of sample collection and initiation of each bioassay test.

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- e. If any of the toxicity tests prove inadequate for evaluating the effluent, EPA may, at the request of ADEC or the permittee, or at its own initiative, substitute alternative tests which will provide the required toxicity information.
- f. Chemical testing for the parameters for which effluent limitations exist shall be performed on a split of each sample collected for bioassay testing. To the extent that the timing of sample collection coincides with that of the sampling required for the effluent limitations, chemical analysis of the split sample will fulfill the requirements of that monitoring as well.

4. Toxics Control Plan:

If the results from the chronic tests indicate that the NOEC of the most sensitive species is found to be less than 1% effluent, the permittee shall notify EPA and ADEC in writing within five days of completion of the tests. The permittee shall also submit to the EPA and ADEC a toxicity control plan and an implementation schedule within 45 days of completion of the tests. The control plan shall include appropriate measures for additional wastewater treatment, or changes in the operation to reduce the toxicity of the wastewater to acceptable levels, and further toxicity monitoring plans. The implementation schedule shall include a date for compliance. EPA (in consultation with ADEC) will review the control plan and implementation schedule, and upon its acceptance, will require its implementation through enforcement provision of Section 309 of the Clean Water Act.

C. Environmental Monitoring Program Requirements

1. Overview.

The permittee shall develop and implement environmental monitoring programs to determine if pollutants accumulate in organisms to levels which could cause deleterious effects on benthic organisms and to determine compliance with applicable state water quality standards.

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The permittee shall develop detailed environmental monitoring program plans to address pollutant bioaccumulation and compliance with state water quality standards as outlined in section C.2. and C.3. below (within 30 days of the effective date of this permit). These program plans shall be submitted to EPA and ADEC for approval and shall include at a minimum a detailed discussion of the following: (1) the monitoring objectives, (2) all monitoring procedures and methods, (3) a statistically valid sampling design, including appropriate replication, (4) a Quality Assurance/Quality Control program, and (5) a detailed discussion of how data will be used to meet, test, and evaluate the monitoring objectives. If necessary to meet the program objectives, EPA, in consultation with ADEC, will require changes in the monitoring program design before approval. Concurrence with ADEC is required if the monitoring program is made less stringent, reduced in scope, or discontinued.

Following review of the results from annual data analyses submitted by the permittee, EPA, in consultation with ADEC and the permittee, may adjust the frequency and extent of data collection and analysis specified in this permit if such adjustments in the sampling design are necessary to meet the objectives of the monitoring program. Concurrence from ADEC is required if the frequency or extent of data collection and analysis is made less stringent, reduced in scope, or discontinued. In general, an expanded program may be implemented whenever significant adverse effects are indicated or detected. Conversely, the monitoring program may be reduced if no significant adverse effects are detected and if such a reduction will not interfere with the ability to determine whether the permittee is in compliance with water quality standards. Monitoring programs shall be adjusted and implemented by the next scheduled survey whenever practicable.

The monitoring program plan and all monitoring results will be made available by EPA for public review upon request.

2. Bioaccumulation of Metals

The objective of this monitoring program is to sample and measure the metal levels in organisms before and during the discharge of effluent from outfall 001.

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Tissue samples shall be collected quarterly, beginning within 60 days of the effective date of this permit. Bivalve, sea urchin and polychaete samples shall be collected at the stations shown on Figure 1 of this permit. The following pollutants shall be analyzed from composite tissue samples of *Mytilus edulis* (mussels), *Strangylocentrotus droebachiensis* (sea urchin), and a polychaete.

aluminum
arsenic
cadmium
chromium
copper
iron
lead
manganese
mercury
nickel
selenium
silver
zinc

Sampling methods and analyses conducted shall follow the "Recommended Protocols and Guidelines for Measuring Metals in Puget Sound Water, Sediment and Tissue Samples" (revised December 1989) found in Recommended Protocols and Guidelines for Measuring Selected Environmental Variables in Puget Sound. U.S. Environmental Protection Agency, Region 10, Seattle, WA.

A composite sample, of each species, will be required from each sampling station. If for any reason sufficient tissue mass cannot be collected from the organisms selected above, the permittee may substitute other appropriate organisms for testing. Substitute organisms must be approved by EPA and ADEC prior to use. To use substitute organisms for the bioaccumulation tests, the permittee must submit a report for approval to EPA and ADEC, which identifies the proposed substitute organisms and the justification for substitution. This report must be submitted to EPA and ADEC within 30 days of the effective date of this permit.

Three replicate analyses for each metal shall be performed on each composite tissue sample for statistical and QA/QC purposes. Additional specimens shall be collected at each station and appropriately archived until lab results have been interpreted. Treatment of archived specimens will be identical to the test specimens.

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Results shall be reported as wet weight and dry weight by sample site as mean, standard deviation, range, and sample size for each pollutant, along with a detailed description of laboratory techniques. If any pollutant concentration is below the analytical detection level, the value for that sample shall be arbitrarily set at one-half the minimum detection level for that pollutant. Basic data will also be presented in an appendix for all individual samples including date and location of collection.

Data collected during the operational phase of the project will be compared to baseline data using an appropriate statistical analysis. If data indicate that pollutant concentrations are increasing in tissue samples the permittee shall develop a program which includes appropriate measures for additional wastewater treatment or changes in the operation to reduce the toxicity of the wastewater to acceptable levels, and an implementation schedule. This program shall be submitted to EPA and ADEC within 60 days of EPA notifying the permittee that the test results indicate an increase of pollutant concentrations. EPA (in consultation with ADEC) will review the control plan and implementation schedule, and upon its acceptance, will require its implementation through enforcement provision of Section 309 of the Clean Water Act.

3. Water Chemistry

The purpose of this program is to determine if the water quality standards are being met at the boundary of the mixing zone for outfall 001.

Water samples shall be collected at stations indicated in Figure 1 of this permit. Sampling shall be initiated within 60 days of the effective date of this permit and shall continue every three months thereafter.

Profiles of conductivity (salinity), temperature, and turbidity will be taken at each station. Samples for the following parameters shall be collected at each station within 10 feet and within 50 feet of the water surface. All metals and arsenic shall be analyzed using the total recoverable methods.

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aluminum
arsenic
cadmium
chromium
copper
iron
lead
manganese
mercury
nickel
selenium
silver
zinc
total cyanide
free cyanide
weak acid dissociable (WAD) cyanide
pH
TSS
settleable solids
total dissolved solids
ammonia nitrogen
total residual chlorine

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All reports shall address to the satisfaction of EPA and ADEC how monitoring has met the permit monitoring objectives by using appropriate descriptive and statistical methods to test for and to describe any impacts of the discharge on tissue and water quality. Annual reports shall also quantitatively assess changes over time and shall evaluate the magnitude and ecological significance of observed changes in all parameters measured. The detection limits and precision requirements of the analytical methodology shall be stated in all reports.

5. Adjusted Monitoring.

Based on the results of each yearly survey, EPA, in consultation with ADEC, may increase the sampling frequency and/or adjust the sampling design. However, EPA shall not reduce the requirements without the concurrence of ADEC. As part of the criteria for determining whether monitoring shall be adjusted, the permittee shall address, to the satisfaction of the EPA and ADEC, whether the objectives of the monitoring program are being met.

D. Best Management Practices

The permittee shall provide EPA and ADEC with an evaluation and discussion of the analyzed data. Changes in water quality and tissue chemistry over time and with distance from the outfall shall be addressed. The discussion shall include the advisability of expanding the overall monitoring program into other areas (e.g., fish tissue sampling, in situ bioassay monitoring) or reducing the overall monitoring program.

A written annual report shall be submitted to EPA and ADEC for review and comment. The first report is due within one year of the effective date of this permit and annually thereafter. EPA and ADEC will review the reports to insure that there is compliance with permit conditions and that the objectives of the monitoring program are completely satisfied. If supplemental work is deemed necessary by EPA, in consultation with ADEC, to show permit compliance or to meet the above objectives, a supplemental report shall be due within two months of the request. If EPA and/or ADEC do not submit comments within 45 days of receiving the draft report, the permittee may consider that there are no comments from that agency.

1. The permittee shall develop a Best Management Practices (BMP) plan to establish management practices for activities associated with the mining and milling operations or treatment processes to prevent or mitigate toxic pollutants or hazardous substances from damaging the aquatic environment. This plan shall include the requirements of 40 CFR 125.104. Attachment 1 of this permit includes a copy of 40 CFR 125.104.

2. The permittee shall submit the BMP plan to both EPA and ADEC for approval within six months of the effective date of this permit.

3. The BMP plan shall be fully implemented as soon as possible but no later than one year after the effective date of this permit or upon commencement of facility construction activities, whichever occurs first.

4. The permittee shall amend the BMP plan whenever there is a change in the facility design, construction, operations, or maintenance which materially affect the facility's potential for discharge of significant amounts of hazardous or toxic pollutants into waters of the United States.

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5. If the BMP plan proves to be ineffective in achieving the general objectives of preventing the release of toxic or hazardous pollutants to waters of the United States, the permit and/or the BMP plan may be modified to incorporate the revised BMP requirements.
6. Upon approval, the terms and conditions of the BMP program shall become part of this permit.
7. The permittee shall maintain a description of the BMP program at the facility and shall make the description available to the EPA and ADEC upon request.

E. Quality Assurance Plan

Within 10 days of the effective date of this permit, the permittee shall submit to EPA for review and approval, a quality assurance plan. This plan shall include the following items:

- sampling techniques (field blanks, replicates, duplicates, split spiked or control samples, etc.),
- sample preservation methods,
- sample shipment procedures,
- instrument calibration procedures and preventive maintenance (frequency, standards, spare parts), and
- analytical methods (including quality control checks, quantification/detection levels).

F. Definitions.

1. "Average monthly discharge limitation" means the highest allowable average of "daily discharges" over a calendar month, calculated as the sum of all "daily discharges" measured during a calendar month divided by the number of "daily discharges" measured during that month.
2. "Bypass" means the intentional diversion of waste streams from any portion of a treatment facility.
3. "Daily discharge" means the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in units of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the day.

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4. A "Grab" sample is a single sample or measurement taken at a specific time or over as short a period of time as is feasible.
5. "Maximum daily discharge limitation" means the highest allowable "daily discharge."
6. mg/l = milligrams per liter
7. "NOEC" (No Observable Effect Concentration) means the concentration of effluent for which survival, reproduction, or growth of the test organisms is not significantly different from that of the control organisms.
8. "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
9. A "24-hour composite" sample shall mean a flow-proportioned mixture of not less than 8 discrete aliquots. Each aliquot shall be a grab sample of not less than 100 ml and shall be collected and stored in accordance with procedures prescribed in the most recent edition of Standard Methods for the Examination of Water and Wastewater.
10. ug/l = micrograms per liter
11. "Upset" means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.

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II. MONITORING, RECORDING AND REPORTING REQUIREMENTS

A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under Part I shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge.

B. Monitoring Procedures. Monitoring must be conducted according to test procedures approved under 40 CFR Part 136, unless other test procedures have been specified in this permit.

C. Reporting of Monitoring Results. Monitoring results shall be summarized each month on the Discharge Monitoring Report (DMR) form (EPA No. 3320-1). The reports shall be submitted monthly and are to be postmarked by the 10th day of the following month. Legible copies of these, and all other reports, shall be signed and certified in accordance with the requirements of Part IV.H. Signatory Requirements, and submitted to the Director, Water Division and the State agency at the following addresses:

original to: United States Environmental Protection Agency (EPA)
Region 10
1200 Sixth Avenue, WD-135
Seattle, Washington 98101

copy to: Alaska Department of Environmental Conservation
(ADEC)
Southeast Region
P.O. Box 32420
Juneau, Alaska 99803

D. Additional Monitoring by the Permittee. If the permittee monitors any pollutant more frequently than required by this permit, using test procedures approved under 40 CFR 136 or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR. Such increased frequency shall also be indicated.

E. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;

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2. The individual(s) who performed the sampling or measurements;
3. The date(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

F. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least three years from the date of the sample, measurement, report or application. This period may be extended by request of the Director or ADEC at any time. Data collected on-site, copies of Discharge Monitoring Reports, and a copy of this NPDES permit must be maintained on-site during the duration of activity at the permitted location.

G. Twenty-four Hour Notice of Noncompliance Reporting.

1. The following occurrences of noncompliance shall be reported by telephone to the EPA, Water Compliance Section [(206) 553-1213], within 24 hours from the time the permittee becomes aware of the circumstances:
 - a. Any noncompliance which may endanger health or the environment;
 - b. Any unanticipated bypass which exceeds any effluent limitation in the permit (See Part III.G., Bypass of Treatment Facilities.);
 - c. Any upset which exceeds any effluent limitation in the permit (See Part III.H., Upset Conditions.); or
 - d. Violation of a maximum daily discharge limitation for any of the pollutants listed in the permit.

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2. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

- a. A description of the noncompliance and its cause;
- b. The period of noncompliance, including exact dates and times;
- c. The estimated time noncompliance is expected to continue if it has not been corrected; and
- d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

3. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Water Compliance Section in Seattle, Washington, by phone, (206) 553-1213.

4. Reports shall be submitted to the addresses in Part II.C.1. Reporting of Monitoring Results.

H. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for Part II.C. are submitted. The reports shall contain the information listed in Part II.G.2.

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I. Inspection and Entry. The permittee shall allow the Director, ADEC, or an authorized representative (including an authorized contractor acting as a representative of the Administrator), upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of this permit;
2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the Act, any substances or parameters at any location.

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J. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on interim and final requirements contained in any Compliance Schedule of this permit (Part I) shall be submitted no later than 10 days following each schedule date.

III.

COMPLIANCE RESPONSIBILITIES

A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions.

1. Civil Penalty. The Act provides that any person who violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be subject to a civil penalty, not to exceed \$25,000 per day for each violation.
2. Criminal Penalties:

- a. Negligent Violations. The Act provides that any person who negligently violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than 1 year, or by both.
- b. Knowing Violations. The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act shall be punished by a fine of not less than \$5,000 nor more than \$50,000 per day of violation, or by imprisonment for not more than 3 years, or by both.

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- C. Knowing Endangerment. The Act provides that any person who knowingly violates a permit condition implementing Sections 301, 302, 306, 307, 308, 318, or 405 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. A person which is an organization shall, upon conviction of violating this subparagraph, be subject to a fine of not more than \$1,000,000.
- d. False Statements. The Act provides that any person who knowingly makes any false material statement, representation, or certification in any application, record, report, plan, or other document filed or required to be maintained under this Act or who knowingly falsifies, tampers with, or renders inaccurate any monitoring device or method required to be maintained under this Act, shall upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than 2 years, or by both.

Except as provided in permit conditions in Part III.G.,

Bypass of Treatment Facilities and Part III.H., Upset Conditions, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

- C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
- D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.

- E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
- F. Removed Substances. Solids, sludges, filter backwash, or other pollutants removed in the course of treatment or control of wastewaters shall be disposed of in a manner such as to prevent any pollutant from such materials from entering navigable waters.
- G. Bypass of Treatment Facilities:
1. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2 and 3 of this section.
 2. Notice:
 - a. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
 - b. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting.
 3. Prohibition of bypass.
 - a. Bypass is prohibited and the Director or ADEC may take enforcement action against a permittee for a bypass, unless:
 - (1) The bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;

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- (2) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
- (3) The permittee submitted notices as required under paragraph 2 of this section.

- b. The Director and ADEC may approve an anticipated bypass, after considering its adverse effects, if the Director and ADEC determine that it will meet the three conditions listed above in paragraph 3.a. of this section.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 2 of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - a. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - b. The permitted facility was at the time being properly operated;
 - c. The permittee submitted notice of the upset as required under Part II.G., Twenty-four Hour Notice of Noncompliance Reporting; and
 - d. The permittee complied with any remedial measures required under Part III.D., Duty to Mitigate.

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3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

- I. Toxic Pollutants. The permittee shall comply with effluent standards or prohibitions established under Section 307(a) of the Act for toxic pollutants within the time provided in the regulations that establish those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

GENERAL REQUIREMENTS

- A. Changes in Discharge of Toxic Substances. Notification shall be provided to the Director and ADEC as soon as the permittee knows of, or has reason to believe:
 1. That any activity has occurred or will occur which would result in the discharge, on a routine or frequent basis, of any toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - a. One hundred micrograms per liter (100 ug/l);
 - b. Two hundred micrograms per liter (200 ug/l) for acrolein and acrylonitrile; five hundred micrograms per liter (500 ug/l) for 2,4-dinitrophenol and for 2-methyl-4, 6-dinitrophenol; and one milligram per liter (1 mg/l) for antimony;
 - c. Five (5) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or
 - d. The level established by the Director in accordance with 40 CFR 122.44(f).
 2. That any activity has occurred or will occur which would result in any discharge, on a non-routine or infrequent basis, of a toxic pollutant which is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":
 - a. Five hundred micrograms per liter (500 ug/l);
 - b. One milligram per liter (1 mg/l) for antimony;

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c. Ten (10) times the maximum concentration value reported for that pollutant in the permit application in accordance with 40 CFR 122.21(g)(7); or

d. The level established by the Director in accordance with 40 CFR 122.44(f).

B. Planned Changes. The permittee shall give notice to the Director and ADEC as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when:

1. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source as determined in 40 CFR 122.29(b); or

2. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under Part IV.A.1.

C. Anticipated Noncompliance. The permittee shall also give advance notice to the Director and ADEC of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements.

D. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

E. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit. The application should be submitted at least 180 days before the expiration date of this permit.

F. Duty to Provide Information. The permittee shall furnish to the Director and ADEC, within a reasonable time, any information which the Director or ADEC may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director or ADEC, upon request, copies of records required to be kept by this permit.

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G. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application, or any report to the Director or ADEC, it shall promptly submit such facts or information.

H. Signatory Requirements. All applications, reports or information submitted to the Director and ADEC shall be signed and certified.

1. All permit applications shall be signed as follows:

a. For a corporation: by a responsible corporate officer.

b. For a partnership or sole proprietorship: by a general partner or the proprietor, respectively.

c. For a municipality, state, federal, or other public agency: by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director or ADEC shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

a. The authorization is made in writing by a person described above and submitted to the Director and ADEC, and

b. The authorization specified either an individual or a position having responsibility for the overall operation of the regulated facility or activity, such as the position of plant manager, operator of a well or a well field, superintendent, position of equivalent responsibility, or an individual or position having overall responsibility for environmental matters for the company. (A duly authorized representative may thus be either a named individual or any individual occupying a named position.)

3. Changes to authorization. If an authorization under paragraph IV.H.2. is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of paragraph IV.H.2. must be submitted to the Director and ADEC prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

I. Availability of Reports. Except for data determined to be confidential under 40 CFR Part 2, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the offices of the Director and ADEC. As required by the Act, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under Section 311 of the Act.

K. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

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L. Severability. The provisions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers. This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Director at least 30 days in advance of the proposed transfer date;

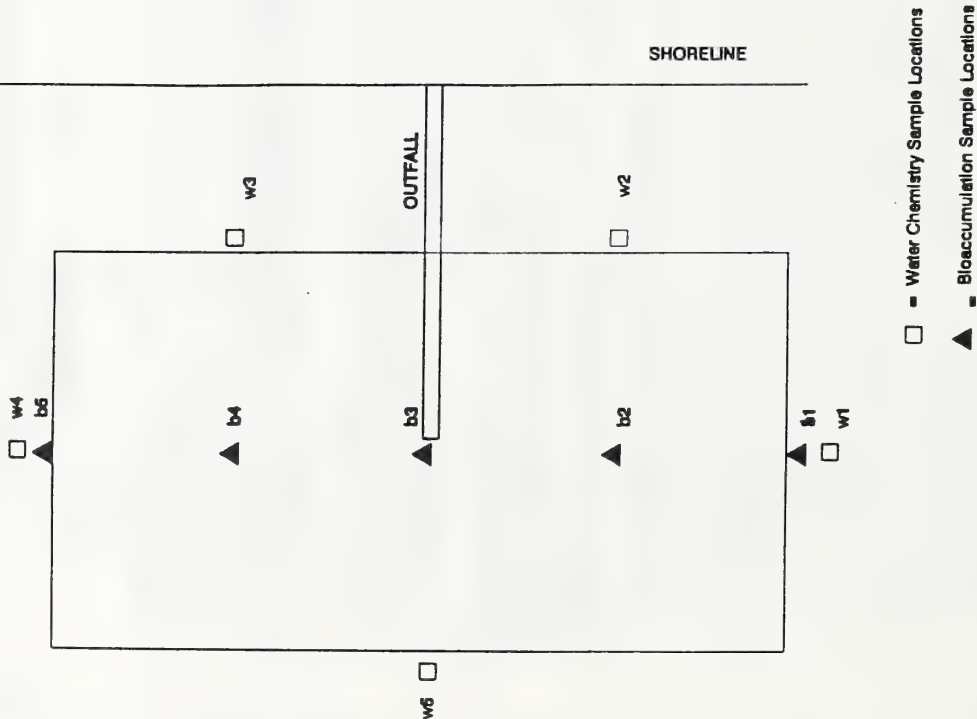
2. The notice includes a written agreement between the existing and new permittees containing a specific date for transfer of permit responsibility, coverage, and liability between them; and

3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph 2 above.

N. State Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by Section 510 of the Act.

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Figure 1
Environmental Monitoring Sample Locations



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ATTACHMENT 1

Best Management Practices Plan Requirements

§ 125.104. Best management practices programs.

(a) BMP programs shall be developed in accordance with good engineering practices and with the provisions of this subpart.

(b) The BMP program shall:

- (1) Be documented in narrative form, and shall include any necessary plot plans, drawings or maps;
- (2) Establish specific objectives for the control of toxic and hazardous pollutants.

(i) Each facility component or system shall be examined for its potential for causing a release of significant amounts of toxic or hazardous pollutants to waters of the United States due to equipment failure, improper operation, natural phenomena such as rain or snowfall, etc.

(ii) Where experience indicates a reasonable potential for equipment failure (e.g., a tank overflow or leakage), natural condition (e.g., precipitation), or other circumstances to result in significant amounts of toxic or hazardous pollutants reaching surface waters, the program should include a prediction of the direction, rate of flow and total quantity of toxic or hazardous pollutants which could be discharged from the facility as a result of each condition or circumstance.

(3) Establish specific best management practices to meet the objectives identified under paragraph (b)(2) of this section, addressing each component or system capable of causing a release of significant amounts of toxic or hazardous pollutants to the waters of the United States.

(4) The BMP program: (i) May reflect requirements for Spill Prevention Control and Countermeasure (SPCC) plans under section 311 of the Act and 40 CFR Part 151, and may incorporate any part of such plans into the BMP program by reference.

(Comment: EPA has proposed section 311(h)(1)(c) regulations (43 FR 39276) which require facilities subject to NPDES to develop and implement SPCC plans to prevent oil and hazardous substances discharges from their facilities. While Section 311(h)(1)(c) requires only practical activities and minor construction, the proposed 40 CFR

Part 151 (SPCC) regulations are more stringent and comprehensive with respect to their requirements for spill prevention. In developing BMP programs in accordance with Subpart K, owners or operators should also consider the requirements of proposed 40 CFR Part 151 which may address many of the same areas of the facility covered by this Subpart.)

(ii) Shall assure the proper management of solid and hazardous waste in accordance with regulations promulgated under the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) (40 U.S.C. 8901 et seq.). Management practices required under RCRA regulations shall be expressly incorporated into the BMP program;

(iii) Shall address the following points for the ancillary activities in § 125.102:

- (A) Statement of policy;
- (B) Spill Control Committee;
- (C) Material Inventory;
- (D) Material compatibility;
- (E) Employee training;
- (F) Reporting and notification procedures;
- (G) Visual inspections;
- (H) Preventive maintenance;
- (I) Housekeeping; and
- (J) Security.

(Comment: Additional technical information on BMPs and the development of a program is contained in a publication entitled "NPDES Best Management Practices Guidance Document." Copies may be obtained by written request to Edward A. Kramer (EN-336), Office of Water Enforcement, Environmental Protection Agency, Washington, DC, 20460.)

(c)(1) The BMP program must be clearly described and submitted as part of the permit application. An application which does not contain a BMP program shall be considered incomplete. Upon receipt of the application, the Director shall approve or modify the program in accordance with the requirements of this subpart. The BMP program as approved or modified shall be included in the draft permit (§ 124.6). The BMP program shall be subject to the applicable

permit issuance requirements of Part 124, resulting in the incorporation of the program (including any modifications of the program resulting from the permit issuance procedures) into the final permit.

(2) Proposed modifications to the BMP program which affect the discharger's permit obligations shall be submitted to the Director for approval. If the Director approves the proposed BMP program modification, the permit shall be modified in accordance with § 122.62, provided that the Director may waive the requirements for public notice and opportunity for hearing on such modification if he or she determines that the modification is not significant. The BMP program, or modification thereof, shall be fully implemented as soon as possible but not later than one year after permit issuance, modification, or revocation and, reassurance unless the Director specifies a later date in the permit.

Note: A later date may be specified in the permit, for example, to enable coordinated preparation of the BMP program required under these regulations and the SPCC plan required under 40 CFR Part 151 or to allow for the development of a program related to the facility's BMP or SPCC program.

(d) The discharger shall maintain a description of the BMP program at the facility and shall make the description available to the Director upon request.

(e) The owner or operator of a facility subject to this subpart shall amend the BMP program in accordance with the provisions of this subpart when ever there is a change in facility design, construction, operation, or maintenance which materially affects the facility's potential for discharge of significant amounts of hazardous or toxic pollutants into the waters of the United States.

(f) If the BMP program proves to be ineffective in achieving the general objective of preventing the release of significant amounts of toxic or hazardous pollutants to those waters and the specific objectives and requirements under paragraph (b) of this section, the permit and/or the BMP program shall be subject to modification to incorporate revised BMP requirements.

APPENDIX E

**List of Agencies,
Organizations,
and Persons
Receiving Copies
of the FEIS**

Agencies

Alaska DEC Dick Stokes	City of Haines City Administrator Walt Wilcox
DNR-Division of Parks & Outdoor Recreation Bill Gary	City of Haines Planing Committee David Nanney
Alaska DNR, State Parks Linda Kruger	Glen Justis Corps of Engineers
Alaska DNR Chris Landis	John Tobias Corps of Engineers Regulatory Branch
Alaska DNR Andy Pekovich	DGGS Rick Noll
DNR, DLWM/SERO Elizaveta Shadura	Environmental Protection Agency Robert Burd
Alaska City Dept. of Govern. Coord. Gabrielle LaRoche	Environmental Protection Agency Rick Seaborne, WD-136
Alaska Dept. of Fish & Game Rick Reed	Haines Borough Fred Shields
Alaska Dept. of Fish & Game Janet Hall Schempf	Haines Borough Becky Mitchell
Alaska Dept. of Fish & Game Ray Staska	Haines Borough Assembly Ray Menaker
BLM David Dorris	Job Service Micki Bradley
BLM Dick Vernimen	National Marine Fisheries Service Sue Mello
City and Borough of Juneau Dept. of Community Development	National Marine Fisheries Service Steven Pennoyer
City and Borough of Juneau Planing Commission Merle Bottage	State of Alaska Paul Rusanowski
City and Borough of Juneau Murray Walsh	U.S. Bureau of Mines Pat & David Carnes
City of Haines Planning Commission David Nanney	U.S. Bureau of Mines Al Clough
City of Haines Mayor Frank L. Wallace	U.S. Bureau of Mines Jim Coldwell

U.S. Department of Interior
Paul Gates

Kara Berg
Glacier Bay Sea Kayaks

USFWS
Nevin Holmberg

Paul Berry

USFWS
Deborah Rudis

Kären Besser

Astrid Bethers

Organizations and Individuals

Mike Bethers

Lauri J. Adams
Sierra Club Legal Defense Fund

Gretchen Bishop

Loren Adkins

Norman Blank

Joe & Eunice Akagi

Patricia D. Blank

Judy Alaback

Cosmo Bloom

Alaska Trollers Assoc.

Steven C. Borell, P.E.
Alaska Miners Assn., Inc.

Alaskans for Juneau

Bob Bottge

Dave Allison

E.O. Bracken

Jeanie Allison

Aaron Brakel

Cherie M. Andrew

Judy Brakel

Bob Andrews

Floyd Branson

Rich Babarovich

Doug Bridge
Glacier Bay Sea Kayaks

Sissi Babich

William G. Brock
Wm. Brock & Associates

Bruce Baker

Marjorie Bantz

Gerald Brookman

Paul Barnes

Robert Brown

John F. Barry

Geron Bruce
United SE Alaska Gillnetters

Randolph Bayliss
Environmental Engineer

Scott Brylinsky

John Beckley

Don Burford

Joel Bennett

Cindy Buxton

Fred Bergander

Jim Calvin
McDowell Group

Margaret Calvin	Chuck Craig
Shirley Campbell	Laurie Ferguson Craig
Tom Candrey	R.L. Craig
Capital City Weekly	Stuart B. Cramer
Scott Carey	Jean Crawford
Richard Carstensen	Chris Cumming
Tom Cashen	Cecily Cunningham
Donna Catotti	Bryson Dean
Glenn Cave	Alroy DeAngelis
David Chambers	Dennis DeBolt
Sierra Club Legal Defense Fund	Sealaska Corporation
Chilkat Valley News	Christia Den
June Christal	Valerie DeLaune
Michael Clark	L.H. Demerath
Brian Cochrane	David Diebel
Lee Coffman	Angie Dixon
Kathy Coghill	Debra Donahue
Stuart Cohen	National Wildlife Federation
Jim Coldwell	Stephanie Dotson
Forrest Cole	Chad Drennan
Cathy Connor	Jack Druckenmiller
Melissa Connor	Jim Dumont
Greg Cook	Juneau Parks & Rec. Advisory Board
Judy Cooper	Rich Dwyer
Larry Cooper	Goldbelt, Inc.
Bill Corbus	ERA Helicopters
Jack Cottrell	F.O. Eastaugh
B. Craig	Bill Edwards
	Larry Edwards

Andrew Eggen	Al Gilliam
Dan Egolf	Patty Glackin Haines Chamber of Commerce
Roger Eichman	Lorraine Godwin
Kathy Ellis	Rob Goldberg
Thomas Ely	Richard Golden
Peter Enticknap	Peter Goll
Robert Erhardt	Sherrie Goll Legislative Services
Bob Fagen	Scott Gorrell
Dave Farmer	Dale Gosnell
Wray Featherstone	Skip Gray Friends of Berners Bay
Len Feldman	Donald Greenberg
Marjorie Fields	Patti Greene
Robert Fike	Greater Juneau Chamber of Commerce
Chris Finch SEACC	Michael Griffin
Bill Finlay	Bob Grochow
First Bank	Gary Gunstrom
John Floreske, Jr.	Peter T. Hagan Sarah Anderson
Dick Folta	Haines Public Library
Lee Forman	Tom Hall
Lynda Foreman	AMAX Marge Hollenbaugh
Jim Fowler	Ed & Kathy Hansen
Mary Fuchs	Ronald G. Hansen Consulting Civil Engineer
Anne Fuller	Alice Hanson
Corrine Fulwiler Glacier Bay Sea Kayaks	Paulla Hardy
Robert Garrison	
Howard & Bonita Gild	

Karla Hart Alaska Rainforest Treks	Norman Hughes
David Hatfield	Ralph C. Hunt AK Pacific Barge Line
Noreen Hautala	Bud & Cindy Ivey
Russell Heath	J.B. Jacks
Karl & Vivian Hegg	Willette Janes
Dr. Shiela Helgarth	Kathleen Jensen
Richard Hellard	Mark Jensen
John W. Henley	Tim June
Dale Henkins	Juneau Area State Parks Citizen Advisory Board
John W. Henley	Juneau Audobon Society
Joe Henri	Juneau Economic Development Community
Daniel Henry	Juneau Empire News Director
Jeanne Henry	KINY Radio-TV
Pete Hettinger	KJNO/KTKU
Venetta Hildebrad	KJUD-TV KSUP Radio
Corry Hildenbrand Haines Light and Power	KTOO-TV and FM News Director
Lois Hiller	Bonnie Kaden Glacier Bay Sea Kayaks
Steve Hinkle	Kelly Kahler
Phil Hocker Mineral Policy Center	Kathleen Kaill
Philip Hoffman	Geoff Kany
Phil R. Holdsworth	Dale Kelley
Eric Holle	Chris Kent
Dan Hopson	Steven & Anne Kessler
Shane D. Horton	Pamela Killbreath
D.L. Howe	Mary Lou King Taku Conservation Society
John Howe	

Mary Kirchnoff	Richard Lomire UAS Library
Matt & Patricia Kirchoff	
Katya Kirsch	Becky Long Alaska Survival
Ben Kirkpatrick	Craig Loomis
Kathy Knight	Eric Loomis
Loretta Knightlingen	Kathy Loomis
Peter & Christine Koch	Lynn Canal Conservation, Inc.
Kurt & Christine Kondzela	E. Neil MacKinnon Kyak Mining
Jeff & Cheri Kruger	
Marilyn Kuoch	Jim Mackovjak Point Adolphus Seafood
Brian Labadle Echo Bay Mines Ltd.	Mark Madrid
David LaChapelle	Frank & Judith Maier
Donald B. Lawrence	Kathy Mally Alliance for Juneau's Future
Ken Leghorn Alaska Discovery	Marian Mann
Bill Leighty	Brad Marden METI
Jack Leighty Southern Maryland Audobon Society	Lauie Manchester
Heather & Chip Lende	Robert Marshall
Harvey Leonard	Becky Martin-Byrd
Joyce Levine	Ed Masi
Phyllis Lewis	M. Mason
Stephen Lewis	Ken Mass
Buck Lindekugel	Karen Max
Kathryn Lizik	Craig McCormick
Robert Loescher Sealaska Corporation	Karin McCullough
Robert Loisell Klukwan Forest Products	Marla McDaniel
	Tim McDonough

M.D. McInnis International Curator Resources, Ltd.	Katey Palmer Jamie Parsons
Cecil & Lynnette McNutt	Dick Pegues
Luann McVey	Larry Pepper
Joe Mehrkens SE Alaska Natural Resources Center	Joe Perkins Guess & Rudd
Vivian C. Menaker	Jackson Peters
M.A. Menzies	Patricia Phillips
George Messerschmidt	Ginger Piper
Tom Meyer	Catherine Pohl
Mark Miles	Ernie Polley
Eliabeth Miller Alliance for Juneau's Future	Ken Post Sterling Prohaski
Rick Miller	Thomas Quinlan
George Moerlein	Brian N. Rae
Rebecca Monroe	Josh Ramquist
Vincent Morasco	Jim Rehfeldt
Susan J. Murray SE Alaska Natural Resources Center	Amanda Richardson
Ann Myren	Robert Richins Echo Bay Mines
Dick Myren	Karl Richter
Vincent Nathan ESE	Rudy J. Ripley Commercial Art
Fred Norley	Susan Rick
Northern Construction	Amanda Richardson
Elizabeth Opp	Rudy J. Ripley Commercial Art
Florence Orth	
Charlie Ott	Heidi Robinchaud Alaska Reform
Dana Owen	Brian Roe

Yereth Rosen Reuters News Service	Vera B. Smith
Bev Rosenthal	Mark Sogge
Luther Russell Meridian Gold Company	A.J. Soltys
Michael Sakarias Juneau Group of the Sierra Club	Steve Sorenson Birch Horton
Bobbi Sams	Jack Speed
John A. Sandor	John Staub
Jon Sandstedt	Cheryl Stead
John J. Schnabel	Richard Steele
Roger Schnabel Northern Timber Corporation	Alan Stein
Elaine Schroeder	Louise & Oscar Steinberg
Michael Sharon	Cecily Stern
Albert Shaw	Louisa Stoughton
Jev Shelton SE Gillnet Federation	Jim Stratton
Susan Shook	Pauline N. Strong
Sierra Club Legal Defense Fund	David Sturgis
Sherry Simpson	Harold Stowell Department of Geology University of Alaska
John Sisk	Pauline N. Strong
Fred Sloan	David Sturgis
Jeffrey Sloss Tongass Tourism & Recreation	Dan Sullivan
Frank Smith	Bob Swanson
Gene Smith	John Swanson
Kenneth A. Smith	Leslie E. Swanson
Ken & Ethel Smith	Paul H. Swift
Robert Smith	Gail Taber/Robert Steele
	J.P. Tangen
	Grover Taylor

Jim Taylor WIDCO Waste Services, Inc.	Janet Wallin
Temsco Helicopters	C.R. Wanamaker
Christy Tengs	Ed Warren
Peter Tennis	David Walter
Paula Terrel Thane Neighborhood Assoc.	Nancy Waterman
Joe & Judy Thomas	James Webb Alaska Electric Light and Power
Judy Thompson	Pat Whelan
Joyce Thoresen Friends of Berners Bay	John White
Mark Thoreson United SE Alaska Gillnetters	Katy White
Kim Titus	Bill Whitman
Kim & Barb Turley	Randall Wiest
Peggy Turner	Fred Wigg
Roxanne Turner Consultant	James M. Wilcox, Sr.
Jay Tutchton Sierra Club Legal Defense Fund	Anthony Williams
Maryln Twitchell Sierra Club Legal Defense Fund	Sandy Williams
United Fishermen of Alaska	Steve Williams KHNS Radio
United SE Alaska Gillnetters	Joe Wilson Goldbelt, Inc.
David Nanney Upper Lynn Canal Fish & Game Advisory Committee	Richard Wilson
Linda Van Houten	Tim Wilson
Rick Van Nieuwenhuyse Placer Dome USA	Diane Wirth
Tim Volwiler	Ron Wood
Woody Walker	Glenn Woodward
	Phyllis Woolwine
	Marianne Wright
	Ross Writer
	Karen Wuestenfeld

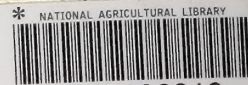
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